Supplementary materials for Ghanem MH et al

Proteomic and single-cell transcriptomic dissection of human plasmacytoid dendritic cell response to influenza virus

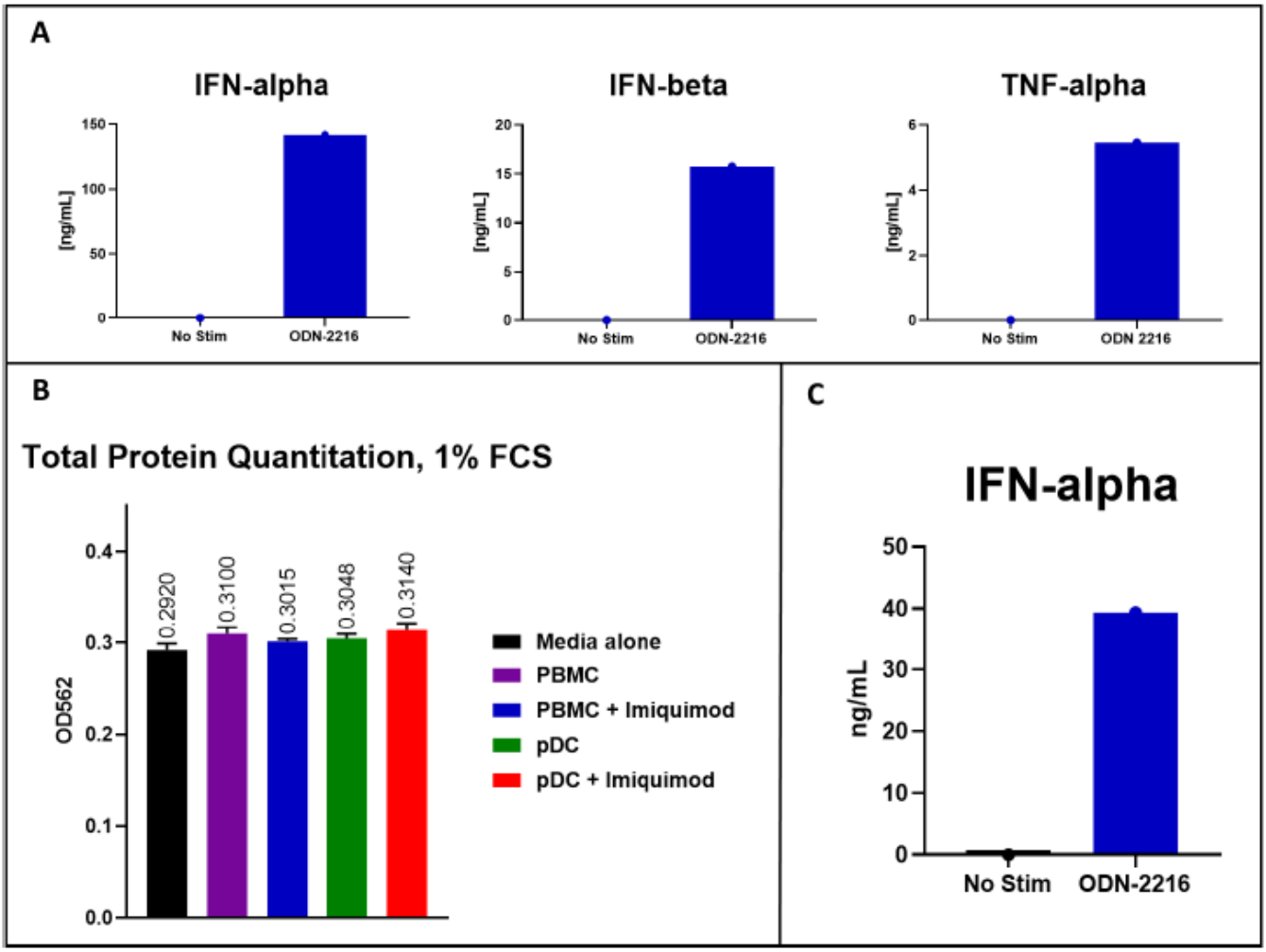


Figure S1: Media optimization towards LC-MS/MS.

A) pDCs cultured in the presence of 1% FCS are highly responsive to stimulation, producing robust amounts of IFN-alpha, IFN-beta and TNF-alpha. B) BCA assay for total protein content. Despite substantial cytokine production, pDCs only marginally enrich the protein content of the culture media, as >90% of media protein is derived from FCS alone. Stimulated pDCs were no different in this regard than unstimulated pDCs or PBMCs. C) pDCs cultured in Advanced RPMI, containing minimal amounts of albumin, insulin and holo-transferrin, without any serum supplement, remain highly functional. ODN2216, TLR9 agonist. Imiquimod, TLR7 agonist.

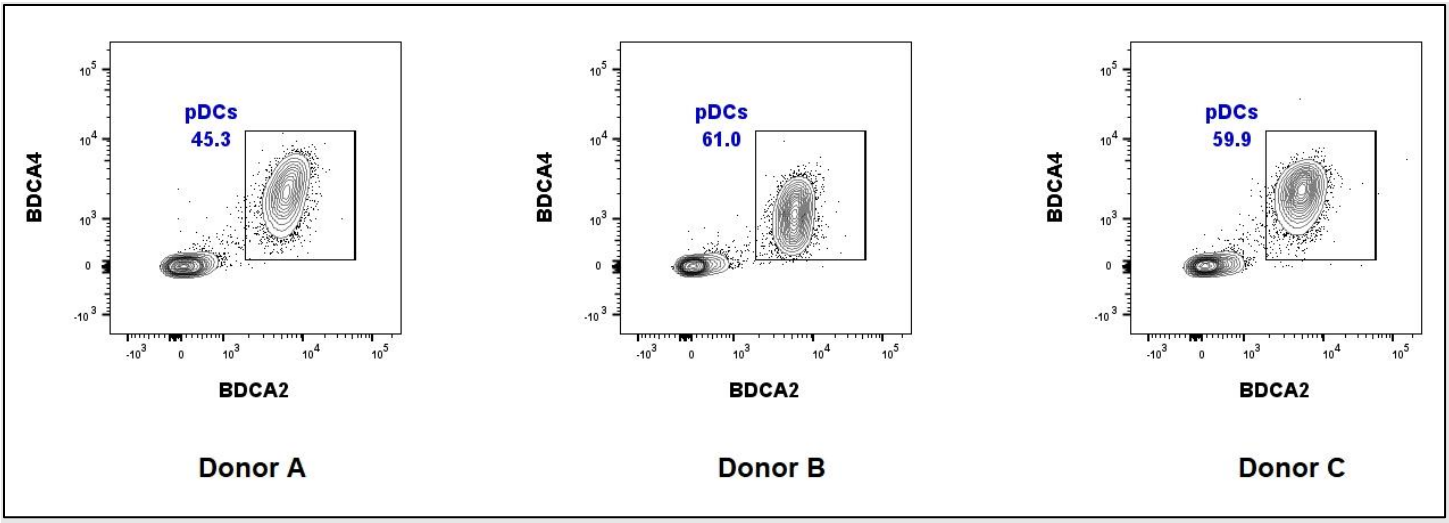
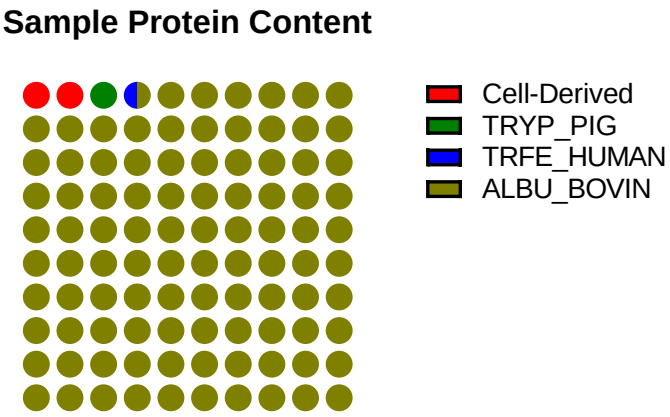


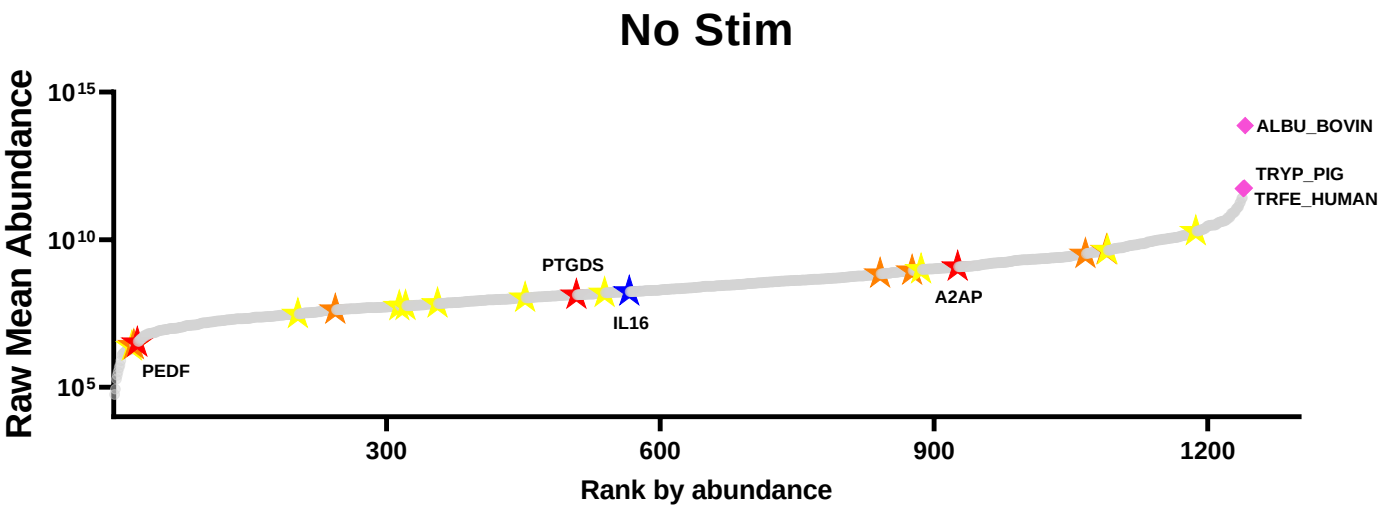
Figure S2: pDC purity for the secretome cultures.

pDCs were enriched from 3 donors emphasizing yield over purity. Purity was determined by staining for BDCA2 and BDCA4. Cell yields were: Donor A, 4.2e6; Donor B 3.7e6, Donor C 1.5e6 total cells. Cell viability was >95% by fluorescent cell counting using Acridine Orange / Propidium Iodide staining and the Cellometer Auto 2000 instrument. Pre-enrichment pDC frequency was 0.2-0.3% among PBMCs in all donors.

A


Sample Protein Content
Cell-Derived
TRYP_PIG
TRFE_HUMAN
ALBU_BOVIN

B


No Stim
Raw Mean Abundance
10^{15}
10^{10}
10^{5}
ALBU_BOVIN
TRYP_PIG
TRFE_HUMAN
PTGDS
IL16
A2AP
PEDF
300
600
900
1200
Rank by abundance

C

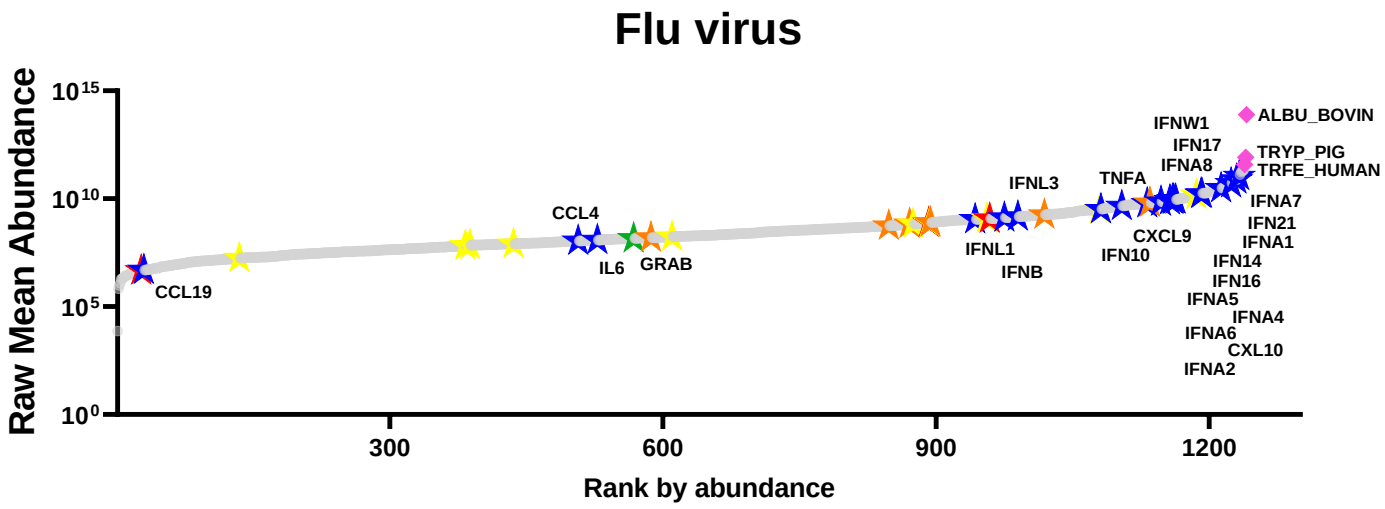

Flu virus
Raw Mean Abundance
10^{15}
10^{10}
10^{5}
10^{0}
ALBU_BOVIN
IFNW1
IFN17
IFNA8
TRYP_PIG
TRFE_HUMAN
IFNL3
TNFA
IFNA7
IFN21
IFNA1
CCL4
CXCL9
IFN10
IFNL1
IFNB
IFN14
IFN16
IFNA5
IFNA4
IFNA6
CXL10
IFNA2
IL6
GRAB
CCL19
300
600
900
1200
Rank by abundance

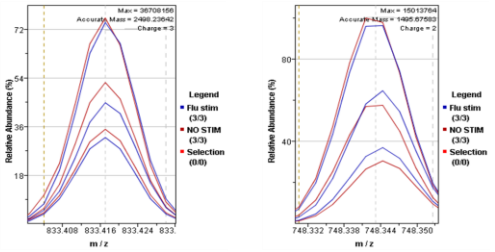
Figure S3. The pDC baseline and influenza-induced secretomes.

A) Protein content in the samples by relative abundance. B) Proteins identified in the unstimulated group ranked by average abundance. C) Proteins identified in the Influenza H1N1-stimulated group ranked by average abundance. For B and C: Data points represent unique proteins. Pink diamonds; exogenous proteins. Yellow, orange, red stars: proteins annotated as 'secreted' in the UniProt database, with relative enrichment of expression in pDCs among circulating leukocytes according to the Protein Atlas (http://www.proteinatlas.org/), with yellow=mild, orange=moderate, and red=significant pDC enrichment. Blue stars; cytokines/chemokines. Green star; granzyme B. Gray data points, with all points fused into a single line, represent proteins not annotated as 'secreted' in UniProt or not significantly enriched for expression in pDCs according to the Protein Atlas. Select proteins of interest are directly labeled.

A

HEMO_HUMAN, Hemopexin

Example Peptide Abundances



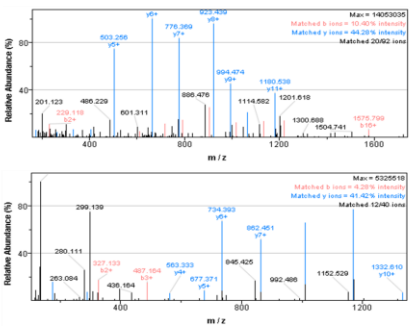
EVGTPHGIILDSVDAA FIC[160.0307]PGSSR (3+)

YYC[160.0307]FQGNQFLR (2+)

Peptide Count	Mean Ion Score	Mean Protein Score	Ratio (Flu stim/ NO STIM)	P-value (Flu stim vs. NO STIM)
20	57	1,133	0.99	0.89

HEMO_HUMAN, Hemopexin

Example MS/MS Spectra



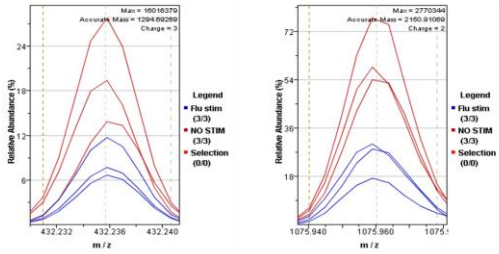
EVGTPHGIILDSVDAA FIC[160.0307]PGSSR (3+)

YYC[160.0307]F QGNQFLR (2+)

B

DPYL2_HUMAN, Dihydropyrimidinase-related protein 2

Example Peptide Abundances



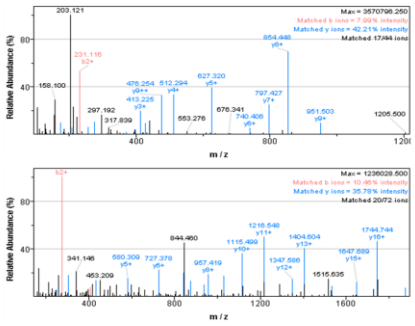
MVIPGGIDVHTR (3+)

FQMPDQGMTSADDFFQGTK (2+)

Peptide Count	Mean Ion Score	Mean Protein Score	Ratio (Flu stim/ NO STIM)	P-value (Flu stim vs. NO STIM)
21	61	1,065	0.46	3.4E-27

DPYL2_HUMAN, Dihydropyrimidinase-related protein 2

Example MS/MS Spectra



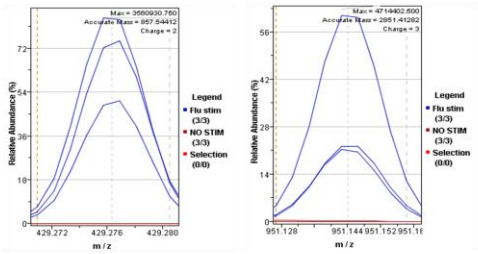
MVIPGGIDVHTR (3+)

FQMPDQGMTSA DDFFQGTK (2+)

C

TNFA_HUMAN, Tumor necrosis factor

Example Peptide Abundances



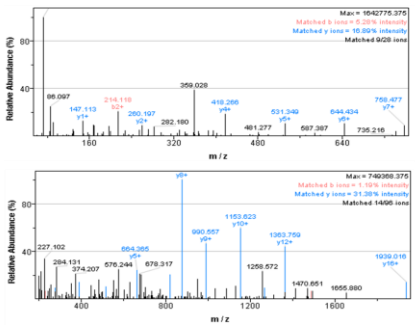
VNLLSAIK (2+)

ETPEGAEAKPWYEPIYL GGVFQLEK (3+)

Peptide Count	Mean Ion Score	Mean Protein Score	Ratio (Flu stim/ NO STIM)	P-value (Flu stim vs. NO STIM)
5	38	137	72.1	3.5E-17

TNFA_HUMAN, Tumor necrosis factor

Example MS/MS Spectra



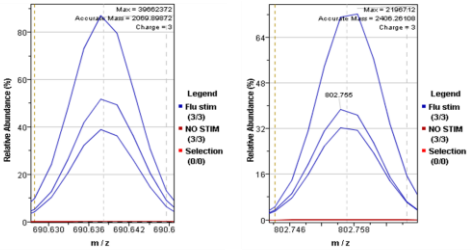
VNLLSAIK (2+)

ETPEGAEAKPWYEPIYL GGVFQLEK (3+)

D

IFN21_HUMAN, Interferon alpha-21

Example Peptide Abundances



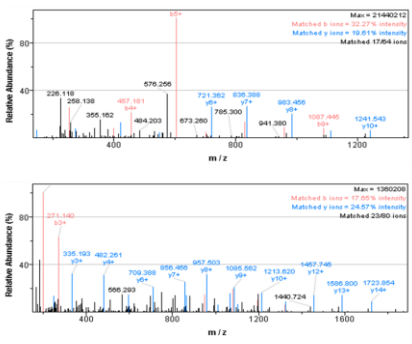
HDFGFPQEEFDG NQFQK (3+)

AQAISVLHEMIQ QTFNLFSTK (3+)

Peptide Count	Mean Ion Score	Mean Protein Score	Ratio (Flu stim/ NO STIM)	P-value (Flu stim vs. NO STIM)
7	64	1,432	468	2.0E-21

IFN21_HUMAN, Interferon alpha-21

Example MS/MS Spectra



HDFGFPQEEFDG NQFQK (3+)

AQAISVLHEMIQ QTFNLFSTK (3+)

Figure S4. Representative protein species identified in the baseline and induced pDC secretomes.

For each protein, example graphics for two peptides are shown, including a monoisotopic MS peak (feature plotted as relative % abundance) as generated by the Elucidator program (charge state indicated), and an ms/ms spectrum for each peptide. Blue peaks are y-ions, red peaks are b-ions, and black are unmatched peaks.The feature peaks (left) in each case are an overlay of aligned monoisotopic peaks of MS spectra for the 12 LC-MS/MS runs in the experiment. Below the MS feature graphics is a table representing quantitation and identification details for each protein. A. Hemopexin, a protein produced by the liver and not known to be produced by circulating leukocytes, is not significantly different in preparations from unstimulated and flu stimulated cells. B. DPYL2, a metabolic enzyme, is enriched in the media of unstimulated cells compared to flu stimulated cells. C-D. Interferon α-1/13 and TNF-α are tremendously upregulated in the flu stimulated condition.

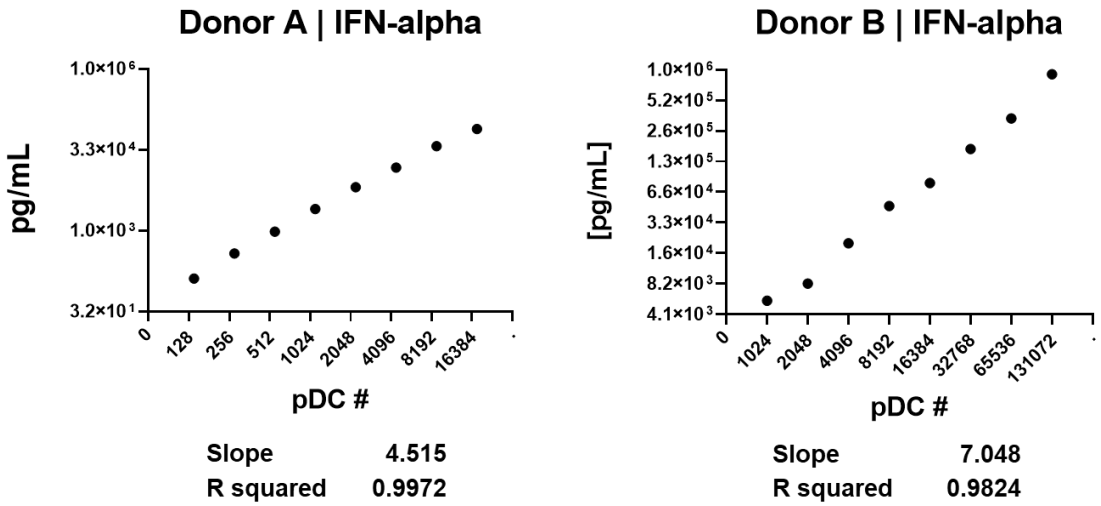


Figure S5. Relationship between pDC input in IFN-α output using influenza H1N1 as the stimulus.

Data derived from pDCs cultured for 24hrs in 96-well plates, with cells in a fixed 200uL culture volume per well. IFN-alpha levels determined using pan-subtype ELISA.

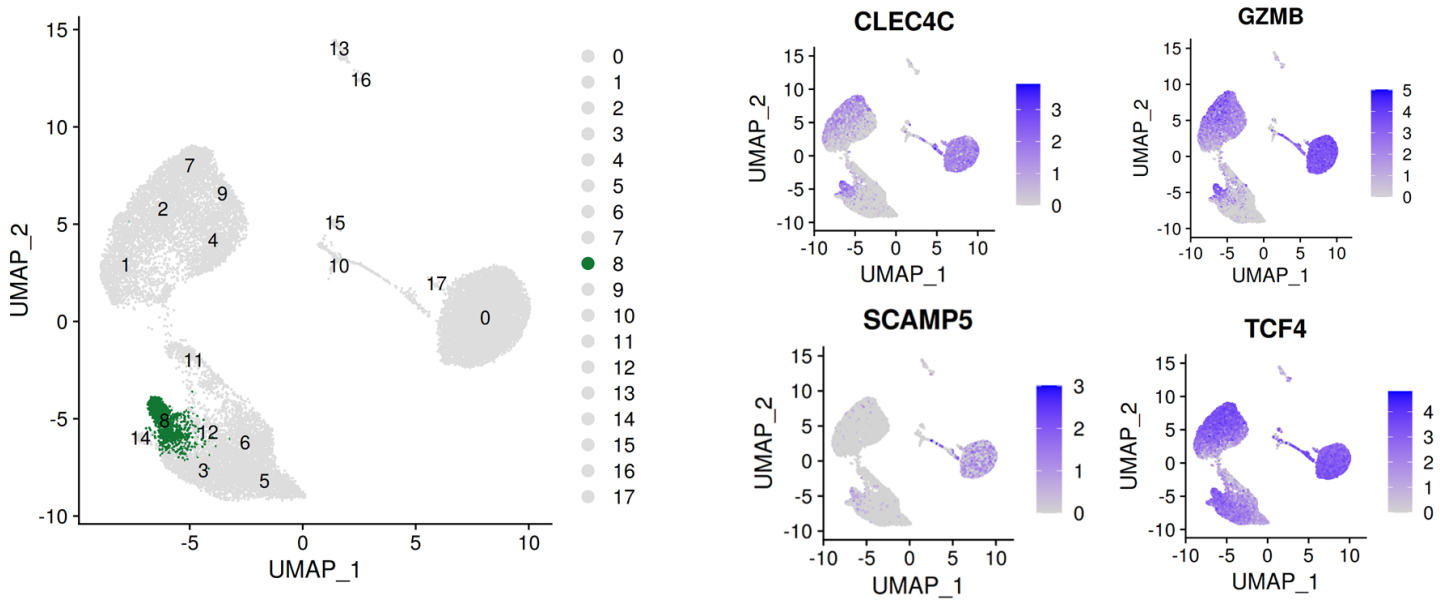


Figure S6. Cluster 8 retains features of unperturbed pDCs to 24hrs in the presence of influenza virus.

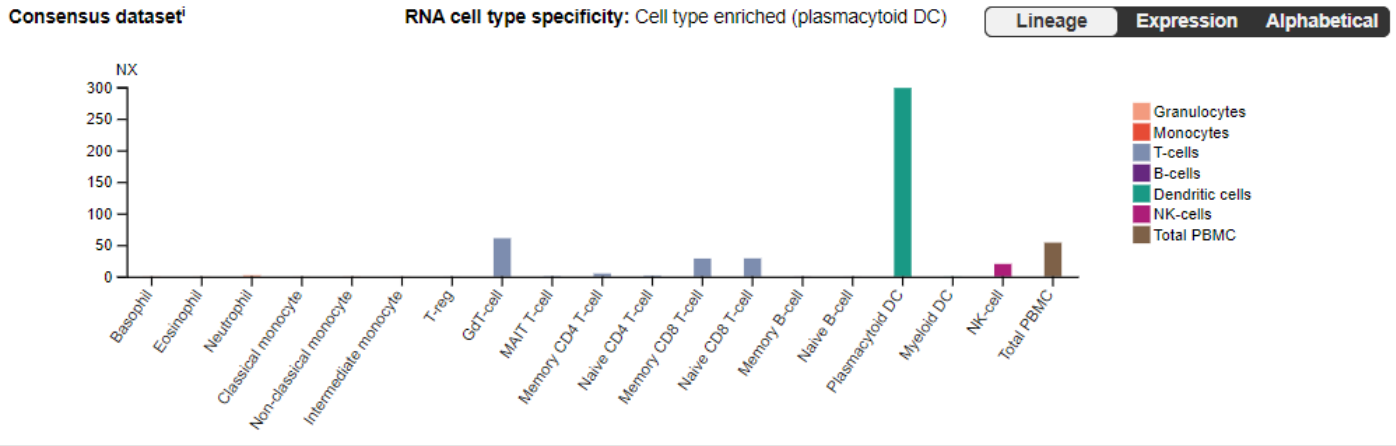


Figure S7. Expression of Granzyme B across leukocyte subsets in the Human Protein Atlas.

Table S1 LC-MS/MS Identified Proteins in the pDC Secretome with normalized expression data.

UniProt ID	Peptide Count	Ratio (Flu stim:NO STIM)	P-value (Flu stim vs. NO STIM)	-LOG(P)
IFN10	2	306	0	>40
IFN17	2	91.6	0	>40
IFNW1	3	44.2	0	>40
IFNA8	4	901	0	>40
IFNA7	10	470	0	>40
IFNB	3	647	3.6E-40	39.4432
IFN14	4	508	1.0E-33	33.0001
IFNA4	4	550	2.3E-30	29.6356
IFNA6	5	234	1.1E-28	27.9531
IFN16	6	94.9	3.1E-28	27.5147
DPYL2	21	0.46	3.4E-27	26.472
IFNA5	2	56.1	1.3E-25	24.8755
PNCB	4	0.36	9.5E-25	24.0244
IFNL3	2	186	2.0E-23	22.71
IFN21	7	468	2.0E-21	20.6942
IFNA2	4	296	2.2E-18	17.6657
TNFA	5	72.1	3.5E-17	16.4548
CALU	1	8.21	1.1E-16	15.9626
IFNA1	10	499	4.6E-16	15.3368
H2AY	12	0.44	2.6E-13	12.5894
CCL4	1	6.85	6.5E-13	12.1896
COR1B	5	0.43	3.4E-12	11.4641
H1X	5	0.28	1.4E-10	9.86614
LGMN	4	11.0	1.8E-10	9.7428
PDCD4	2	0.14	5.3E-10	9.27597
TCL1A	2	0.49	8.8E-10	9.05453
GLO2	2	0.35	4.4E-09	8.36002
IFIT3	7	40.5	8.1E-09	8.09334
HP1B3	2	0.24	1.1E-08	7.96098
RHG17	6	0.48	5.2E-08	7.28802
COR1C	17	0.39	9.2E-08	7.03763
MPRD	2	0.41	2.9E-07	6.53745
CXL10	6	118	4.7E-07	6.32873
PACN1	12	0.41	4.8E-07	6.31623
FSCN1	12	11.0	6.1E-07	6.21789
PRP19	6	0.41	7.6E-07	6.11827

PAF1	**1**	**0.26**	**8.5E-07**	**6.07109**
VAPA	**2**	**0.35**	**8.7E-07**	**6.06053**
VP13C	**6**	**0.38**	**1.1E-06**	**5.95468**
FLNB	**56**	**0.44**	**1.5E-06**	**5.81446**
VATB2	**6**	**0.51**	**2.6E-06**	**5.58603**
SC22B	**3**	**0.23**	**2.6E-06**	**5.57873**
CNDP2	**21**	**0.46**	**2.8E-06**	**5.55705**
RAB7A	**5**	**0.36**	**3.5E-06**	**5.45817**
CATB	**5**	**16.1**	**4.6E-06**	**5.34008**
LMNB2	**15**	**0.36**	**5.0E-06**	**5.29722**
RB11B	**8**	**0.33**	**6.0E-06**	**5.21961**
CATC	**14**	**33.0**	**6.3E-06**	**5.19921**
CLCA	**1**	**0.40**	**6.7E-06**	**5.17594**
H15	**8**	**0.46**	**9.7E-06**	**5.01341**
SC24C	**9**	**0.42**	**1.1E-05**	**4.94348**
RUXE	**2**	**0.28**	**1.3E-05**	**4.87484**
VATG1	**3**	**0.53**	**1.4E-05**	**4.84285**
U520	**6**	**0.36**	**1.5E-05**	**4.83239**
ROCK1	**1**	**0.49**	**1.5E-05**	**4.81531**
RU17	**6**	**0.40**	**1.7E-05**	**4.76246**
ISG20	**2**	**4.84**	**1.7E-05**	**4.7602**
PAXX	**4**	**0.38**	**1.9E-05**	**4.71897**
H14	**8**	**0.40**	**2.1E-05**	**4.66979**
RET4	**5**	**0.73**	**2.4E-05**	**4.62599**
HNRL2	**7**	**0.45**	**3.5E-05**	**4.45556**
IFNL1	**3**	**31.7**	**3.5E-05**	**4.45432**
ARHG7	**3**	**0.32**	**3.9E-05**	**4.40506**
FA49B	**14**	**0.45**	**4.3E-05**	**4.36917**
IC1	**4**	**18.3**	**4.7E-05**	**4.33106**
CAB45	**3**	**6.61**	**5.2E-05**	**4.28108**
SRRT	**1**	**0.40**	**5.9E-05**	**4.22775**
KTN1	**3**	**0.34**	**6.8E-05**	**4.16577**
CAPG	**14**	**0.50**	**6.9E-05**	**4.15889**
HDAC2	**3**	**0.27**	**7.0E-05**	**4.15783**
H12	**1**	**0.43**	**8.1E-05**	**4.0913**
ZC3HF	**1**	**0.39**	**8.8E-05**	**4.05596**
LGUL	**1**	**0.33**	**9.8E-05**	**4.00997**
TLN1	**85**	**0.50**	**9.8E-05**	**4.00948**
VPS25	**1**	**0.22**	**1.0E-04**	**3.99396**
HNRL1	**1**	**0.36**	**1.0E-04**	**3.97964**
NUMA1	**15**	**0.34**	**1.1E-04**	**3.95195**
HPLN3	**5**	**43.5**	**1.1E-04**	**3.94539**
STAT1	**14**	**7.51**	**1.2E-04**	**3.9333**
IFIT2	**5**	**46.5**	**1.4E-04**	**3.84802**

RBM25	**2**	**0.38**	**1.4E-04**	**3.84436**
AN32A	**4**	**0.42**	**1.6E-04**	**3.80883**
ARP2	**13**	**0.51**	**1.6E-04**	**3.79942**
RBP56	**2**	**0.39**	**1.6E-04**	**3.79507**
AIMP1	**3**	**0.24**	**1.7E-04**	**3.78068**
KT3K	**1**	**2.91**	**1.7E-04**	**3.76221**
AIFM1	**5**	**0.40**	**1.7E-04**	**3.75945**
SRPRA	**1**	**0.15**	**1.7E-04**	**3.75721**
11-Sep	**4**	**0.43**	**1.8E-04**	**3.744**
GNPI1	**4**	**0.39**	**1.8E-04**	**3.73779**
MCTS1	**1**	**0.43**	**1.9E-04**	**3.72862**
SEM7A	**8**	**5.49**	**1.9E-04**	**3.72538**
RSMB, RSMN	**3**	**0.45**	**2.1E-04**	**3.66776**
CAPZB	**15**	**0.49**	**2.2E-04**	**3.66314**
LYAM1	**3**	**11.5**	**2.3E-04**	**3.64608**
AATC	**8**	**0.57**	**2.3E-04**	**3.63283**
WDR1	**17**	**0.63**	**2.4E-04**	**3.61154**
IF4H	**1**	**8.60**	**2.5E-04**	**3.60206**
PNOC	**2**	**45.4**	**2.5E-04**	**3.59602**
ACTN4	**46**	**0.50**	**2.7E-04**	**3.57675**
SRP14	**3**	**0.42**	**2.7E-04**	**3.57528**
HCFC1	**2**	**0.37**	**2.7E-04**	**3.56527**
RAB5C	**2**	**0.40**	**2.7E-04**	**3.56511**
CXCL9	**8**	**147**	**2.8E-04**	**3.55705**
AP2M1	**2**	**0.39**	**2.9E-04**	**3.5397**
KAD2	**10**	**0.40**	**3.1E-04**	**3.50307**
SF01	**4**	**0.42**	**3.3E-04**	**3.47912**
PTPRE	**8**	**0.37**	**3.3E-04**	**3.47599**
7-Sep	**11**	**0.46**	**3.3E-04**	**3.47521**
GRAB	**2**	**18.1**	**3.4E-04**	**3.46916**
HNRPD	**9**	**0.45**	**3.4E-04**	**3.46332**
NH2L1	**1**	**0.42**	**3.7E-04**	**3.43192**
PSB1	**6**	**0.47**	**4.0E-04**	**3.3933**
SPS1	**3**	**0.38**	**4.1E-04**	**3.39073**
PRDX2	**8**	**0.56**	**4.1E-04**	**3.38977**
TBL1X	**1**	**0.25**	**4.1E-04**	**3.38595**
CAZA2	**5**	**0.50**	**4.1E-04**	**3.38426**
GDIA	**5**	**0.48**	**4.3E-04**	**3.36957**
RAB2A	**3**	**0.30**	**4.4E-04**	**3.35793**
HMCS1	**4**	**13.8**	**4.4E-04**	**3.35586**
LANC1	**4**	**0.42**	**4.6E-04**	**3.33913**
HDHD2	**2**	**0.41**	**4.8E-04**	**3.31912**
ESYT1	**1**	**0.29**	**4.8E-04**	**3.31677**
DDAH2	**5**	**0.37**	**5.0E-04**	**3.30417**

COR1A	**20**	**0.56**	**5.1E-04**	**3.29183**
CATZ	**4**	**3.33**	**5.3E-04**	**3.27548**
DHX9	**9**	**0.44**	**5.4E-04**	**3.26833**
2-Sep	**8**	**0.41**	**5.6E-04**	**3.25524**
CAP1	**24**	**0.56**	**5.6E-04**	**3.25065**
VINC	**35**	**0.51**	**5.6E-04**	**3.24841**
COPE	**5**	**0.49**	**5.8E-04**	**3.23897**
RBMX	**6**	**0.47**	**6.1E-04**	**3.21453**
PARK7	**11**	**0.47**	**6.2E-04**	**3.20859**
RBP2	**2**	**0.26**	**6.3E-04**	**3.19846**
PGK1	**24**	**0.57**	**6.4E-04**	**3.19716**
ROAA	**4**	**0.48**	**6.5E-04**	**3.18595**
EIF3B	**7**	**0.47**	**6.9E-04**	**3.15939**
PSA1	**11**	**0.52**	**7.0E-04**	**3.15633**
SMRC2	**4**	**0.25**	**7.0E-04**	**3.15627**
SP16H	**4**	**0.40**	**7.0E-04**	**3.15596**
TRAD1	**1**	**39.1**	**7.2E-04**	**3.14363**
COPA	**20**	**0.51**	**7.3E-04**	**3.13954**
CELF2	**1**	**0.41**	**7.4E-04**	**3.12819**
SAHH	**10**	**0.50**	**7.6E-04**	**3.1197**
SF3B1	**4**	**0.43**	**7.6E-04**	**3.11839**
ENPP2	**5**	**12.9**	**7.7E-04**	**3.11283**
RL5	**10**	**0.45**	**7.7E-04**	**3.11165**
UBC9	**2**	**0.31**	**7.8E-04**	**3.10807**
APEX1	**8**	**0.37**	**7.8E-04**	**3.10563**
IF4A2	**4**	**0.43**	**8.0E-04**	**3.0968**
6PGL	**8**	**0.45**	**8.3E-04**	**3.07956**
ILF3	**10**	**0.46**	**8.4E-04**	**3.07603**
RMD3	**1**	**0.26**	**8.5E-04**	**3.0689**
PRDX6	**13**	**0.51**	**8.8E-04**	**3.05567**
AP1B1	**9**	**0.51**	**9.0E-04**	**3.04793**
ABHEB	**3**	**0.43**	**9.1E-04**	**3.04206**
ARP3	**20**	**0.52**	**9.5E-04**	**3.02452**
DDTL	**2**	**0.33**	**9.9E-04**	**3.00542**
TCRG1	**1**	**0.36**	**1.0E-03**	**3**
PML	**1**	**0.35**	**1.0E-03**	**3**
RAB1A	**1**	**0.24**	**1.0E-03**	**3**
KYNU	**2**	**0.40**	**1.0E-03**	**3**
CUL4B	**3**	**0.46**	**1.0E-03**	**3**
RHOA	**4**	**0.51**	**1.0E-03**	**3**
PSB3	**4**	**0.47**	**1.0E-03**	**3**
TSN	**4**	**0.45**	**1.0E-03**	**3**
PSA3	**6**	**0.53**	**1.0E-03**	**3**
MK01	**6**	**0.52**	**1.0E-03**	**3**

PSA5	**6**	**0.52**	**1.0E-03**	**3**
UBE2N	**6**	**0.47**	**1.0E-03**	**3**
SC23A	**7**	**0.46**	**1.0E-03**	**3**
SFPQ	**9**	**0.65**	**1.0E-03**	**3**
SNAA	**9**	**0.53**	**1.0E-03**	**3**
PSB4	**9**	**0.49**	**1.0E-03**	**3**
MDHC	**11**	**0.53**	**1.0E-03**	**3**
SLAF7	**1**	**9.51**	**2.0E-03**	**2.69897**
RUXGL	**1**	**0.45**	**2.0E-03**	**2.69897**
LSM3	**1**	**0.44**	**2.0E-03**	**2.69897**
DYL1	**1**	**0.37**	**2.0E-03**	**2.69897**
STRN3	**1**	**0.25**	**2.0E-03**	**2.69897**
LHPP	**1**	**0.00**	**2.0E-03**	**2.69897**
AIP	**2**	**0.52**	**2.0E-03**	**2.69897**
LZIC	**2**	**0.40**	**2.0E-03**	**2.69897**
XRN2	**2**	**0.34**	**2.0E-03**	**2.69897**
IL6	**3**	**9.85**	**2.0E-03**	**2.69897**
UCHL3	**3**	**0.52**	**2.0E-03**	**2.69897**
H2A1D	**3**	**0.51**	**2.0E-03**	**2.69897**
PSB10	**3**	**0.50**	**2.0E-03**	**2.69897**
NIF3L	**3**	**0.43**	**2.0E-03**	**2.69897**
SRP09	**4**	**0.41**	**2.0E-03**	**2.69897**
ISG15	**5**	**24.5**	**2.0E-03**	**2.69897**
MA1A1	**5**	**4.49**	**2.0E-03**	**2.69897**
FABP5	**5**	**0.53**	**2.0E-03**	**2.69897**
IAH1	**5**	**0.37**	**2.0E-03**	**2.69897**
CYC	**5**	**0.36**	**2.0E-03**	**2.69897**
PEBP1	**5**	**0.32**	**2.0E-03**	**2.69897**
PDC6I	**6**	**0.57**	**2.0E-03**	**2.69897**
CAN1	**6**	**0.50**	**2.0E-03**	**2.69897**
PNPH	**6**	**0.47**	**2.0E-03**	**2.69897**
HNRPL	**7**	**0.54**	**2.0E-03**	**2.69897**
DHX15	**7**	**0.45**	**2.0E-03**	**2.69897**
NPM	**8**	**0.46**	**2.0E-03**	**2.69897**
ARPC2	**9**	**0.54**	**2.0E-03**	**2.69897**
ILF2	**9**	**0.48**	**2.0E-03**	**2.69897**
SF3B3	**10**	**0.54**	**2.0E-03**	**2.69897**
NAGK	**12**	**0.57**	**2.0E-03**	**2.69897**
PSA6	**12**	**0.54**	**2.0E-03**	**2.69897**
CAZA1	**12**	**0.52**	**2.0E-03**	**2.69897**
ADA	**15**	**0.41**	**2.0E-03**	**2.69897**
CATA	**15**	**0.41**	**2.0E-03**	**2.69897**
GELS	**23**	**0.78**	**2.0E-03**	**2.69897**
GDIB	**27**	**0.52**	**2.0E-03**	**2.69897**

IQGA1	**28**	**0.51**	**2.0E-03**	**2.69897**
VIME	**34**	**0.66**	**2.0E-03**	**2.69897**
PP6R1	**1**	**0.39**	**3.0E-03**	**2.52288**
HS105	**2**	**3.10**	**3.0E-03**	**2.52288**
DNJA1	**2**	**2.75**	**3.0E-03**	**2.52288**
PLIN3	**2**	**0.55**	**3.0E-03**	**2.52288**
RBM8A	**2**	**0.50**	**3.0E-03**	**2.52288**
NUDT5	**2**	**0.49**	**3.0E-03**	**2.52288**
LSM8	**2**	**0.45**	**3.0E-03**	**2.52288**
SF3A1	**2**	**0.42**	**3.0E-03**	**2.52288**
UBC12	**2**	**0.41**	**3.0E-03**	**2.52288**
AP1S2	**2**	**0.40**	**3.0E-03**	**2.52288**
PP14B	**2**	**0.36**	**3.0E-03**	**2.52288**
NLTP	**2**	**0.33**	**3.0E-03**	**2.52288**
HSP13	**3**	**4.27**	**3.0E-03**	**2.52288**
AP2B1	**3**	**0.44**	**3.0E-03**	**2.52288**
DDX1	**3**	**0.43**	**3.0E-03**	**2.52288**
RS21	**3**	**0.38**	**3.0E-03**	**2.52288**
RL22	**3**	**0.34**	**3.0E-03**	**2.52288**
PSB9	**4**	**0.53**	**3.0E-03**	**2.52288**
CBX3	**4**	**0.45**	**3.0E-03**	**2.52288**
STX7	**4**	**0.26**	**3.0E-03**	**2.52288**
A16A1	**5**	**0.47**	**3.0E-03**	**2.52288**
F10A1	**5**	**0.46**	**3.0E-03**	**2.52288**
LAP2A	**6**	**0.52**	**3.0E-03**	**2.52288**
TPR	**6**	**0.37**	**3.0E-03**	**2.52288**
EF1G	**10**	**0.62**	**3.0E-03**	**2.52288**
COF1	**10**	**0.60**	**3.0E-03**	**2.52288**
DCPS	**10**	**0.42**	**3.0E-03**	**2.52288**
PSA7	**11**	**0.52**	**3.0E-03**	**2.52288**
EIFCL	**11**	**0.51**	**3.0E-03**	**2.52288**
TWF2	**11**	**0.45**	**3.0E-03**	**2.52288**
COPG1	**12**	**0.55**	**3.0E-03**	**2.52288**
STIP1	**13**	**0.71**	**3.0E-03**	**2.52288**
1433Z	**14**	**0.55**	**3.0E-03**	**2.52288**
TCPA	**15**	**0.57**	**3.0E-03**	**2.52288**
SQSTM	**1**	**46.0**	**4.0E-03**	**2.39794**
ASC	**1**	**0.49**	**4.0E-03**	**2.39794**
THOC4	**1**	**0.45**	**4.0E-03**	**2.39794**
H10	**1**	**0.40**	**4.0E-03**	**2.39794**
CDC73	**1**	**0.36**	**4.0E-03**	**2.39794**
LEO1	**1**	**0.26**	**4.0E-03**	**2.39794**
DDRGK	**1**	**0.22**	**4.0E-03**	**2.39794**
TSNAX	**2**	**0.46**	**4.0E-03**	**2.39794**

ERH	**2**	**0.11**	**4.0E-03**	**2.39794**
SYNC	**3**	**0.61**	**4.0E-03**	**2.39794**
PACN2	**3**	**0.44**	**4.0E-03**	**2.39794**
6-Sep	**4**	**0.53**	**4.0E-03**	**2.39794**
RO60	**4**	**0.49**	**4.0E-03**	**2.39794**
SCFD1	**4**	**0.45**	**4.0E-03**	**2.39794**
PA2G4	**6**	**0.64**	**4.0E-03**	**2.39794**
PSB2	**6**	**0.52**	**4.0E-03**	**2.39794**
ARPC3	**7**	**0.59**	**4.0E-03**	**2.39794**
EF1D	**7**	**0.58**	**4.0E-03**	**2.39794**
RS12	**7**	**0.55**	**4.0E-03**	**2.39794**
ARPC4	**7**	**0.52**	**4.0E-03**	**2.39794**
9-Sep	**8**	**0.35**	**4.0E-03**	**2.39794**
ESTD	**9**	**0.57**	**4.0E-03**	**2.39794**
PSB8	**9**	**0.52**	**4.0E-03**	**2.39794**
LYSC	**9**	**0.48**	**4.0E-03**	**2.39794**
GLOD4	**9**	**0.45**	**4.0E-03**	**2.39794**
H4	**12**	**0.63**	**4.0E-03**	**2.39794**
EIF3A	**13**	**0.49**	**4.0E-03**	**2.39794**
TAGL2	**13**	**0.48**	**4.0E-03**	**2.39794**
PSA4	**14**	**0.49**	**4.0E-03**	**2.39794**
PLEC	**34**	**0.52**	**4.0E-03**	**2.39794**
VAS1	**1**	**10.6**	**0.01**	**2.30103**
LIMD2	**1**	**2.99**	**0.01**	**2.30103**
LCK	**1**	**0.40**	**0.01**	**2.30103**
DKC1	**1**	**0.36**	**0.01**	**2.30103**
SRS11	**1**	**0.12**	**0.01**	**2.30103**
DCNL1	**2**	**0.37**	**5.0E-03**	**2.30103**
HNRDL	**3**	**0.64**	**5.0E-03**	**2.30103**
DEK	**3**	**0.52**	**5.0E-03**	**2.30103**
EIF3E	**3**	**0.50**	**5.0E-03**	**2.30103**
CPNS1	**4**	**0.56**	**5.0E-03**	**2.30103**
VTDB	**6**	**1.28**	**5.0E-03**	**2.30103**
DX39B	**7**	**0.54**	**5.0E-03**	**2.30103**
RL12	**7**	**0.48**	**5.0E-03**	**2.30103**
RAN	**8**	**0.54**	**5.0E-03**	**2.30103**
TCPH	**13**	**0.56**	**5.0E-03**	**2.30103**
TCPG	**14**	**0.58**	**5.0E-03**	**2.30103**
TCPD	**16**	**0.56**	**5.0E-03**	**2.30103**
TCPB	**17**	**0.58**	**5.0E-03**	**2.30103**
UBA1	**24**	**0.58**	**5.0E-03**	**2.30103**
TIA1	**1**	**0.61**	**0.01**	**2.22185**
CPSF6	**1**	**0.51**	**0.01**	**2.22185**
PSMD5	**1**	**0.45**	**0.01**	**2.22185**

ANM1	**2**	**0.49**	**6.0E-03**	**2.22185**
SMU1	**2**	**0.46**	**6.0E-03**	**2.22185**
PUF60	**2**	**0.46**	**6.0E-03**	**2.22185**
NGLY1	**2**	**0.30**	**6.0E-03**	**2.22185**
HCLS1	**3**	**2.94**	**6.0E-03**	**2.22185**
RPE	**3**	**0.48**	**6.0E-03**	**2.22185**
GSHB	**4**	**0.54**	**6.0E-03**	**2.22185**
HMGB2	**6**	**0.52**	**6.0E-03**	**2.22185**
ACPH	**6**	**0.51**	**6.0E-03**	**2.22185**
UB2V1	**7**	**0.49**	**6.0E-03**	**2.22185**
GSTP1	**9**	**0.53**	**6.0E-03**	**2.22185**
MVP	**12**	**0.65**	**6.0E-03**	**2.22185**
1433E	**13**	**0.54**	**6.0E-03**	**2.22185**
HLAE	**1**	**29.6**	**0.01**	**2.1549**
NTF2	**1**	**0.43**	**0.01**	**2.1549**
PFD5	**1**	**0.36**	**0.01**	**2.1549**
PP14A	**1**	**0.32**	**0.01**	**2.1549**
CSTF3	**1**	**0.26**	**0.01**	**2.1549**
EIF3I	**5**	**0.53**	**7.0E-03**	**2.1549**
SAE2	**6**	**0.53**	**7.0E-03**	**2.1549**
PSA2	**7**	**0.45**	**7.0E-03**	**2.1549**
RSSA	**8**	**0.55**	**7.0E-03**	**2.1549**
BUB3	**8**	**0.47**	**7.0E-03**	**2.1549**
COPD	**8**	**0.47**	**7.0E-03**	**2.1549**
HNRPC	**12**	**0.58**	**7.0E-03**	**2.1549**
PROF1	**13**	**0.60**	**7.0E-03**	**2.1549**
1433B	**13**	**0.59**	**7.0E-03**	**2.1549**
ENOA	**20**	**0.54**	**7.0E-03**	**2.1549**
DDX17	**1**	**0.44**	**0.01**	**2.09691**
WDR82	**1**	**0.40**	**0.01**	**2.09691**
SSRP1	**2**	**0.45**	**8.0E-03**	**2.09691**
OSGEP	**2**	**0.43**	**8.0E-03**	**2.09691**
CDC37	**5**	**0.48**	**8.0E-03**	**2.09691**
SYEP	**6**	**0.39**	**8.0E-03**	**2.09691**
AN32B	**7**	**0.48**	**8.0E-03**	**2.09691**
VATA	**9**	**0.63**	**8.0E-03**	**2.09691**
PSME1	**9**	**0.57**	**8.0E-03**	**2.09691**
PSA	**12**	**0.53**	**8.0E-03**	**2.09691**
2AAA	**14**	**0.54**	**8.0E-03**	**2.09691**
CLH1	**37**	**0.61**	**8.0E-03**	**2.09691**
IRF4	**1**	**5.72**	**0.01**	**2.04576**
B2MG	**1**	**4.21**	**0.01**	**2.04576**
STX12	**1**	**0.45**	**0.01**	**2.04576**
PLCB3	**1**	**0.39**	**0.01**	**2.04576**

DEOC	**1**	**0.36**	**0.01**	**2.04576**
REPI1	**1**	**0.18**	**0.01**	**2.04576**
P66A	**1**	**0.18**	**0.01**	**2.04576**
VP26A	**2**	**0.60**	**9.0E-03**	**2.04576**
CPSF5	**2**	**0.45**	**9.0E-03**	**2.04576**
UB2L3	**6**	**0.61**	**9.0E-03**	**2.04576**
HDGF	**7**	**0.58**	**9.0E-03**	**2.04576**
TCPZ	**8**	**0.60**	**9.0E-03**	**2.04576**
PPIA	**14**	**0.60**	**9.0E-03**	**2.04576**
LMNB1	**21**	**0.55**	**9.0E-03**	**2.04576**
GLYG	**1**	**0.48**	**0.01**	**2**
LSM5	**1**	**0.44**	**0.01**	**2**
SART3	**1**	**0.37**	**0.01**	**2**
SAP	**3**	**2.68**	**0.01**	**2**
UFM1	**3**	**0.48**	**0.01**	**2**
XPP1	**4**	**0.56**	**0.01**	**2**
EWS	**4**	**0.52**	**0.01**	**2**
EIF3D	**5**	**0.59**	**0.01**	**2**
FUBP1	**6**	**0.58**	**0.01**	**2**
RBBP4	**9**	**0.49**	**0.01**	**2**
PLSL	**45**	**0.57**	**0.01**	**2**
MYH9	**78**	**0.63**	**0.01**	**2**
SMD1	**1**	**0.36**	**0.01**	**1.95861**
NOLC1	**1**	**0.29**	**0.01**	**1.95861**
SEC13	**2**	**0.55**	**0.01**	**1.95861**
CZIB	**2**	**0.48**	**0.01**	**1.95861**
PFD2	**2**	**0.46**	**0.01**	**1.95861**
LYPA1	**3**	**0.53**	**0.01**	**1.95861**
API5	**3**	**0.46**	**0.01**	**1.95861**
ARF1, ARF3	**4**	**0.39**	**0.01**	**1.95861**
RS28	**5**	**0.58**	**0.01**	**1.95861**
COPB	**7**	**0.52**	**0.01**	**1.95861**
TPIS	**15**	**0.61**	**0.01**	**1.95861**
IRF8	**1**	**83.8**	**0.01**	**1.92082**
THMS2	**1**	**14.2**	**0.01**	**1.92082**
COPZ1	**1**	**0.51**	**0.01**	**1.92082**
BAP18	**1**	**0.49**	**0.01**	**1.92082**
LRC59	**1**	**0.45**	**0.01**	**1.92082**
BIN1	**1**	**0.45**	**0.01**	**1.92082**
GLGB	**2**	**0.50**	**0.01**	**1.92082**
K1C17	**2**	**0.21**	**0.01**	**1.92082**
GMFG	**3**	**0.57**	**0.01**	**1.92082**
PLPP	**3**	**0.30**	**0.01**	**1.92082**
DBNL	**9**	**0.69**	**0.01**	**1.92082**

TPM4	**11**	**0.60**	**0.01**	**1.92082**
IPO5	**12**	**0.49**	**0.01**	**1.92082**
LDHB	**13**	**0.56**	**0.01**	**1.92082**
KCAB2	**1**	**0.44**	**0.01**	**1.88606**
EIF3K	**2**	**0.51**	**0.01**	**1.88606**
IF1AX	**3**	**0.52**	**0.01**	**1.88606**
SPB8	**4**	**0.49**	**0.01**	**1.88606**
HLAA	**5**	**2.71**	**0.01**	**1.88606**
GPX1	**5**	**0.55**	**0.01**	**1.88606**
XPO1	**7**	**0.59**	**0.01**	**1.88606**
KCD12	**8**	**0.67**	**0.01**	**1.88606**
DDB1	**9**	**0.50**	**0.01**	**1.88606**
ACTS	**15**	**0.77**	**0.01**	**1.88606**
TCPQ	**18**	**0.63**	**0.01**	**1.88606**
RN213	**1**	**17.9**	**0.01**	**1.85387**
NC2A	**1**	**0.47**	**0.01**	**1.85387**
RFA3	**1**	**0.44**	**0.01**	**1.85387**
GMPPB	**1**	**0.34**	**0.01**	**1.85387**
FCL	**2**	**0.56**	**0.01**	**1.85387**
THOP1	**2**	**0.49**	**0.01**	**1.85387**
ABRAL	**3**	**0.50**	**0.01**	**1.85387**
SMD3	**4**	**0.51**	**0.01**	**1.85387**
1433F	**6**	**0.56**	**0.01**	**1.85387**
PARP1	**8**	**0.41**	**0.01**	**1.85387**
IFIT1	**1**	**8.42**	**0.02**	**1.82391**
MTNB	**1**	**0.35**	**0.02**	**1.82391**
ELAV1	**3**	**0.49**	**0.02**	**1.82391**
GSHR	**4**	**0.59**	**0.02**	**1.82391**
FUBP2	**6**	**0.63**	**0.02**	**1.82391**
6PGD	**12**	**0.63**	**0.02**	**1.82391**
COPB2	**14**	**0.57**	**0.02**	**1.82391**
TERA	**30**	**0.59**	**0.02**	**1.82391**
CMPK2	**1**	**29.2**	**0.02**	**1.79588**
SWP70	**1**	**2.76**	**0.02**	**1.79588**
APOA1	**1**	**0.69**	**0.02**	**1.79588**
CNPY3	**1**	**0.58**	**0.02**	**1.79588**
BROX	**1**	**0.47**	**0.02**	**1.79588**
LRC47	**1**	**0.34**	**0.02**	**1.79588**
CATS	**2**	**6.80**	**0.02**	**1.79588**
GMPR2	**2**	**0.54**	**0.02**	**1.79588**
IF4E	**2**	**0.53**	**0.02**	**1.79588**
MGN2	**2**	**0.38**	**0.02**	**1.79588**
AP1M1	**3**	**0.39**	**0.02**	**1.79588**
HNRPR	**5**	**0.68**	**0.02**	**1.79588**

SET	**6**	**0.53**	**0.02**	**1.79588**
PGM2	**8**	**0.50**	**0.02**	**1.79588**
HNRPU	**10**	**0.54**	**0.02**	**1.79588**
PRDX1	**12**	**0.64**	**0.02**	**1.79588**
ARC1B	**15**	**0.67**	**0.02**	**1.79588**
TRFE	**65**	**0.75**	**0.02**	**1.79588**
DDX3X	**1**	**2.31**	**0.02**	**1.76955**
SFT2B	**1**	**0.43**	**0.02**	**1.76955**
PLRG1	**1**	**0.37**	**0.02**	**1.76955**
SMCA4	**1**	**0.29**	**0.02**	**1.76955**
CNN2	**4**	**0.54**	**0.02**	**1.76955**
IF2G	**5**	**0.58**	**0.02**	**1.76955**
PTBP1	**6**	**0.48**	**0.02**	**1.76955**
BUD31	**1**	**0.50**	**0.02**	**1.74473**
LSM4	**1**	**0.46**	**0.02**	**1.74473**
AP1G1	**2**	**0.49**	**0.02**	**1.74473**
CHM1B	**2**	**0.45**	**0.02**	**1.74473**
LIS1	**4**	**0.57**	**0.02**	**1.74473**
GDS1	**5**	**0.52**	**0.02**	**1.74473**
RFA1	**6**	**0.55**	**0.02**	**1.74473**
HSP7C	**28**	**0.63**	**0.02**	**1.74473**
PIPNB	**2**	**0.62**	**0.02**	**1.72125**
FKB15	**3**	**0.58**	**0.02**	**1.72125**
IF4A3	**3**	**0.55**	**0.02**	**1.72125**
1433T	**5**	**0.59**	**0.02**	**1.72125**
SIAS	**5**	**0.46**	**0.02**	**1.72125**
MARE1	**6**	**0.49**	**0.02**	**1.72125**
MYL6	**7**	**0.66**	**0.02**	**1.72125**
H2B2F	**10**	**0.60**	**0.02**	**1.72125**
TMOD3	**1**	**0.53**	**0.02**	**1.69897**
HEBP1	**1**	**0.49**	**0.02**	**1.69897**
2ABA	**2**	**0.61**	**0.02**	**1.69897**
SH3L3	**3**	**0.55**	**0.02**	**1.69897**
EIF3H	**4**	**0.60**	**0.02**	**1.69897**
NDKB	**9**	**0.55**	**0.02**	**1.69897**
DPP3	**14**	**0.59**	**0.02**	**1.69897**
PDC10	**1**	**0.48**	**0.02**	**1.67778**
MTA2	**2**	**0.39**	**0.02**	**1.67778**
SMC3	**2**	**0.28**	**0.02**	**1.67778**
KINH	**5**	**0.66**	**0.02**	**1.67778**
MGN	**1**	**0.49**	**0.02**	**1.65758**
CSTN1	**2**	**5.06**	**0.02**	**1.65758**
SF3B6	**2**	**0.47**	**0.02**	**1.65758**
PPM1G	**4**	**0.46**	**0.02**	**1.65758**

YTDC1	**1**	**0.40**	**0.02**	**1.63827**
CSN4	**2**	**0.54**	**0.02**	**1.63827**
UGPA	**3**	**0.52**	**0.02**	**1.63827**
ADK	**3**	**0.52**	**0.02**	**1.63827**
DEST	**3**	**0.50**	**0.02**	**1.63827**
EMAL2	**4**	**0.60**	**0.02**	**1.63827**
SYK	**6**	**0.61**	**0.02**	**1.63827**
MAT2B	**6**	**0.47**	**0.02**	**1.63827**
PSME2	**10**	**0.60**	**0.02**	**1.63827**
RHG01	**1**	**0.81**	**0.02**	**1.61979**
DHSO	**2**	**0.47**	**0.02**	**1.61979**
DHPR	**4**	**0.41**	**0.02**	**1.61979**
GBP3	**1**	**21.3**	**0.03**	**1.60206**
MATR3	**1**	**0.53**	**0.03**	**1.60206**
EF1D	**1**	**0.49**	**0.03**	**1.60206**
PLST	**1**	**0.41**	**0.03**	**1.60206**
DP13A	**2**	**0.42**	**0.03**	**1.60206**
H33	**3**	**0.60**	**0.03**	**1.60206**
MIF	**3**	**0.51**	**0.03**	**1.60206**
TCPE	**9**	**0.61**	**0.03**	**1.60206**
CAND1	**10**	**0.52**	**0.03**	**1.60206**
SYVC	**1**	**0.49**	**0.03**	**1.58503**
H13	**2**	**0.31**	**0.03**	**1.58503**
SND1	**9**	**0.68**	**0.03**	**1.58503**
SRP72	**1**	**5.71**	**0.03**	**1.56864**
VATE1	**1**	**0.56**	**0.03**	**1.56864**
RL7	**2**	**0.57**	**0.03**	**1.56864**
GSLG1	**3**	**3.18**	**0.03**	**1.56864**
F16P1	**6**	**0.57**	**0.03**	**1.56864**
TRYP_PIG	**10**	**1.69**	**0.03**	**1.56864**
ALDOA	**22**	**0.66**	**0.03**	**1.56864**
CSN5	**1**	**0.57**	**0.03**	**1.55284**
DNJC9	**1**	**0.49**	**0.03**	**1.55284**
RUXF	**2**	**0.50**	**0.03**	**1.55284**
NP1L4	**5**	**0.48**	**0.03**	**1.55284**
AK1A1	**7**	**0.60**	**0.03**	**1.55284**
PTN6	**16**	**0.64**	**0.03**	**1.55284**
TALDO	**16**	**0.59**	**0.03**	**1.55284**
TPM2	**1**	**0.45**	**0.03**	**1.5376**
PTPA	**5**	**0.58**	**0.03**	**1.5376**
ACTB	**21**	**0.70**	**0.03**	**1.5376**
UBL4A	**1**	**0.37**	**0.03**	**1.52288**
MTAP	**1**	**0.36**	**0.03**	**1.52288**
AP1B1	**1**	**0.16**	**0.03**	**1.52288**

GBRL2	**2**	**0.57**	**0.03**	**1.52288**
LZTL1	**2**	**0.43**	**0.03**	**1.52288**
CD2AP	**5**	**0.58**	**0.03**	**1.52288**
RACK1	**8**	**0.63**	**0.03**	**1.52288**
NPC2	**1**	**2.59**	**0.03**	**1.50864**
CRYM	**2**	**0.26**	**0.03**	**1.50864**
GDIR1	**7**	**0.61**	**0.03**	**1.50864**
RLA0	**9**	**0.57**	**0.03**	**1.49485**
TPM3	**20**	**0.65**	**0.03**	**1.49485**
STAT3	**1**	**6.31**	**0.03**	**1.48149**
LXN	**1**	**0.45**	**0.03**	**1.48149**
TMA7	**2**	**0.57**	**0.03**	**1.48149**
EIF3G	**2**	**0.53**	**0.03**	**1.48149**
IMPA1	**7**	**0.50**	**0.03**	**1.48149**
LKHA4	**18**	**0.61**	**0.03**	**1.48149**
TXD17	**2**	**0.58**	**0.03**	**1.46852**
GFRP	**2**	**0.26**	**0.03**	**1.46852**
SPF27	**1**	**0.53**	**0.04**	**1.45593**
SUMO3	**1**	**0.51**	**0.04**	**1.45593**
SC31A	**2**	**0.57**	**0.04**	**1.45593**
TSP1	**1**	**0.74**	**0.04**	**1.4437**
H2A1B	**1**	**0.58**	**0.04**	**1.4437**
OAS3	**2**	**2.91**	**0.04**	**1.4437**
PRDX5	**3**	**0.56**	**0.04**	**1.4437**
PSB6	**3**	**0.51**	**0.04**	**1.4437**
OTUB1	**4**	**0.55**	**0.04**	**1.4437**
DNJC8	**7**	**0.53**	**0.04**	**1.4437**
K2C6B	**9**	**0.35**	**0.04**	**1.4437**
RCC2	**13**	**0.57**	**0.04**	**1.4437**
PHF5A	**1**	**0.26**	**0.04**	**1.4318**
CDC42	**4**	**0.65**	**0.04**	**1.4318**
SYSC	**5**	**0.65**	**0.04**	**1.4318**
PGM1	**9**	**0.54**	**0.04**	**1.42022**
ARC1A	**2**	**0.55**	**0.04**	**1.40894**
DAZP1	**2**	**0.37**	**0.04**	**1.40894**
HLAB	**4**	**2.56**	**0.04**	**1.40894**
IDHC	**9**	**0.64**	**0.04**	**1.40894**
CADH1	**1**	**3.22**	**0.04**	**1.39794**
DENR	**1**	**0.56**	**0.04**	**1.39794**
RGS10	**1**	**0.56**	**0.04**	**1.39794**
SASH3	**1**	**0.54**	**0.04**	**1.39794**
HNRPQ	**4**	**0.65**	**0.04**	**1.39794**
ARK72	**1**	**0.41**	**0.04**	**1.38722**
SPB6	**2**	**0.55**	**0.04**	**1.38722**

ECHD1	**2**	**0.49**	**0.04**	**1.38722**
SMC1A	**3**	**0.50**	**0.04**	**1.38722**
CBX5	**3**	**0.46**	**0.04**	**1.38722**
LPXN	**1**	**0.62**	**0.04**	**1.37675**
EIF3F	**2**	**0.66**	**0.04**	**1.37675**
DDX5	**2**	**0.60**	**0.04**	**1.37675**
ML12A	**5**	**0.75**	**0.04**	**1.37675**
PP1A	**7**	**0.63**	**0.04**	**1.37675**
UFC1	**3**	**0.53**	**0.04**	**1.35655**
TPM3	**1**	**0.67**	**0.05**	**1.34679**
FMC1	**1**	**0.64**	**0.05**	**1.34679**
AP3D1	**2**	**0.17**	**0.05**	**1.34679**
PTMA	**4**	**3.23**	**0.05**	**1.34679**
IMA3	**1**	**2.33**	**0.05**	**1.33724**
RBBP7	**1**	**0.55**	**0.05**	**1.33724**
VAMP7	**1**	**0.41**	**0.05**	**1.33724**
STRAP	**3**	**0.58**	**0.05**	**1.33724**
RAB8A	**3**	**0.57**	**0.05**	**1.33724**
FKB1A	**3**	**0.41**	**0.05**	**1.33724**
IF16	**5**	**0.56**	**0.05**	**1.33724**
HSP74	**12**	**0.62**	**0.05**	**1.33724**
TFIP8	**1**	**0.64**	**0.05**	**1.3279**
MOB1A	**1**	**0.40**	**0.05**	**1.3279**
PEBB	**1**	**0.18**	**0.05**	**1.3279**
GLRX3	**1**	**3.93**	**0.05**	**1.31876**
PRPS2	**3**	**0.56**	**0.05**	**1.31876**
G3BP1	**5**	**0.67**	**0.05**	**1.31876**
GSTO1	**6**	**0.57**	**0.05**	**1.31876**
GYS1	**1**	**3.86**	**0.05**	**1.3098**
CSTF2	**1**	**0.51**	**0.05**	**1.3098**
LC7L3	**1**	**0.50**	**0.05**	**1.3098**
PP2AA	**3**	**0.54**	**0.05**	**1.3098**
CSN2	**1**	**0.49**	**0.05**	**1.30103**
PURA	**2**	**0.58**	**0.05**	**1.30103**
ACLY	**14**	**0.66**	**0.05**	**1.30103**
HNRPK	**15**	**0.71**	**0.05**	**1.30103**
CY24B	**1**	**0.58**	**0.05**	**1.29243**
RBM12	**1**	**0.45**	**0.05**	**1.29243**
SMD2	**2**	**0.50**	**0.05**	**1.29243**
H2A2B	**4**	**0.56**	**0.05**	**1.29243**
BCLF1	**2**	**0.55**	**0.05**	**1.284**
PAIP1	**3**	**0.54**	**0.05**	**1.284**
SRSF6	**2**	**3.15**	**0.05**	**1.27572**
EIF3L	**6**	**0.59**	**0.05**	**1.27572**

MX1	**15**	**2.46**	**0.05**	**1.27572**
FUS	**1**	**2.11**	**0.05**	**1.26761**
SYCC	**1**	**0.56**	**0.05**	**1.26761**
DCTD	**1**	**0.43**	**0.05**	**1.26761**
ARPC5	**4**	**0.51**	**0.05**	**1.26761**
GRB2	**7**	**0.66**	**0.05**	**1.26761**
CFAH	**1**	**1.55**	**0.06**	**1.25964**
HMCN1	**1**	**1.32**	**0.06**	**1.25964**
PP1B	**1**	**0.62**	**0.06**	**1.25964**
DC1I2	**1**	**0.27**	**0.06**	**1.25964**
NOP56	**2**	**0.55**	**0.06**	**1.25964**
TSTD1	**2**	**0.51**	**0.06**	**1.25964**
IST1	**2**	**0.57**	**0.06**	**1.25181**
1433B	**1**	**0.62**	**0.06**	**1.24413**
LYRIC	**1**	**0.11**	**0.06**	**1.24413**
NUCKS	**2**	**0.40**	**0.06**	**1.24413**
ARHL2	**3**	**0.52**	**0.06**	**1.23657**
GMPPA	**1**	**0.51**	**0.06**	**1.22915**
EXOS4	**1**	**0.24**	**0.06**	**1.22915**
THOC2	**1**	**0.35**	**0.06**	**1.22185**
IF2P	**2**	**0.37**	**0.06**	**1.22185**
VPS35	**4**	**0.64**	**0.06**	**1.22185**
CFAB	**1**	**7.00**	**0.06**	**1.20761**
SRGN	**1**	**116**	**0.06**	**1.20066**
DCUP	**1**	**0.27**	**0.06**	**1.20066**
OLA1	**2**	**0.55**	**0.06**	**1.20066**
GBB1	**9**	**0.67**	**0.06**	**1.20066**
HARS1	**11**	**0.59**	**0.06**	**1.20066**
XRCC5	**14**	**0.67**	**0.06**	**1.20066**
SYWC	**15**	**1.76**	**0.06**	**1.20066**
HDGR2	**1**	**0.10**	**0.06**	**1.19382**
CPPED	**2**	**0.52**	**0.06**	**1.19382**
RRBP1	**21**	**0.62**	**0.06**	**1.19382**
PYGB	**1**	**0.62**	**0.07**	**1.18709**
SYDC	**5**	**0.71**	**0.07**	**1.18709**
UBL5	**1**	**1.86**	**0.07**	**1.18046**
K1C16	**11**	**0.23**	**0.07**	**1.18046**
LA	**9**	**0.63**	**0.07**	**1.17393**
UB2V2	**1**	**0.48**	**0.07**	**1.1549**
GGCT	**3**	**0.49**	**0.07**	**1.1549**
NUCL	**17**	**0.61**	**0.07**	**1.1549**
DCD	**1**	**1.47**	**0.07**	**1.14874**
PFD3	**2**	**0.52**	**0.07**	**1.14874**
OSBP1	**1**	**0.51**	**0.07**	**1.14267**

ERF1	**2**	**0.55**	**0.07**	**1.14267**
NP1L1	**5**	**0.58**	**0.07**	**1.14267**
EPS15	**1**	**0.44**	**0.07**	**1.13668**
RTRAF	**2**	**0.61**	**0.07**	**1.13077**
SRSF1	**7**	**0.65**	**0.07**	**1.13077**
EIF3J	**1**	**0.53**	**0.08**	**1.12494**
ACTG	**2**	**0.39**	**0.08**	**1.12494**
CBR1	**3**	**0.34**	**0.08**	**1.12494**
XRCC6	**12**	**0.66**	**0.08**	**1.12494**
PUR6	**5**	**0.62**	**0.08**	**1.11919**
TRXR1	**7**	**0.61**	**0.08**	**1.11919**
IF4G2	**1**	**23.0**	**0.08**	**1.10791**
3BP1	**2**	**2.05**	**0.08**	**1.10791**
TBCA	**4**	**0.68**	**0.08**	**1.10791**
IF4G1	**1**	**4.24**	**0.08**	**1.10237**
CCAR2	**1**	**0.60**	**0.08**	**1.10237**
U2AF2	**2**	**0.53**	**0.08**	**1.09691**
TIMP1	**3**	**0.64**	**0.08**	**1.09691**
FLII	**1**	**0.75**	**0.08**	**1.09151**
ELOC	**1**	**0.58**	**0.08**	**1.09151**
LDHA	**16**	**0.61**	**0.08**	**1.09151**
RMD1	**1**	**0.43**	**0.08**	**1.08619**
MAP1A	**1**	**0.35**	**0.08**	**1.08619**
NECP2	**1**	**0.67**	**0.08**	**1.08092**
1433G	**6**	**0.62**	**0.08**	**1.08092**
PTMS	**2**	**0.43**	**0.08**	**1.07572**
ANR44	**1**	**0.65**	**0.09**	**1.07058**
G3P	**18**	**0.68**	**0.09**	**1.0655**
ERP29	**6**	**0.73**	**0.09**	**1.05552**
TKT	**29**	**0.65**	**0.09**	**1.05552**
STK24	**1**	**0.54**	**0.09**	**1.05061**
HAT1	**1**	**0.38**	**0.09**	**1.05061**
THIC	**2**	**0.58**	**0.09**	**1.05061**
PGAM1	**16**	**0.65**	**0.09**	**1.05061**
FNTA	**1**	**0.55**	**0.09**	**1.04576**
B4GT1	**2**	**2.19**	**0.09**	**1.04576**
ENOPH	**2**	**0.58**	**0.09**	**1.04576**
TCP4	**8**	**0.58**	**0.09**	**1.04096**
TOP1	**1**	**0.46**	**0.09**	**1.03621**
DNJA2	**2**	**1.59**	**0.09**	**1.03621**
AMPB	**8**	**0.58**	**0.09**	**1.03152**
PUR8	**1**	**0.54**	**0.09**	**1.02687**
PLEK	**7**	**1.90**	**0.09**	**1.02687**
ILEU	**13**	**0.72**	**0.09**	**1.02687**

TRY1	**1**	**1.49**	**0.10**	**1.02228**
CK054	**1**	**0.41**	**0.10**	**1.01773**
DNM1L	**1**	**0.71**	**0.10**	**1.01323**
DDX23	**1**	**0.19**	**0.10**	**1.01323**
PDIA3	**13**	**0.72**	**0.10**	**1.01323**
SF3B2	**4**	**0.62**	**0.10**	**1.00877**
NDRG1	**2**	**0.39**	**0.10**	**1.00436**
HLAC	**3**	**3.17**	**0.10**	**1**
H31	**2**	**0.65**	**0.10**	**0.99568**
CUTA	**3**	**0.62**	**0.10**	**0.9914**
U5S1	**1**	**0.60**	**0.10**	**0.98716**
NRDC	**1**	**0.49**	**0.10**	**0.98716**
PIMT	**4**	**0.38**	**0.10**	**0.98716**
PLPHP	**2**	**0.63**	**0.10**	**0.98297**
TEBP	**3**	**1.84**	**0.10**	**0.98297**
ALDOC	**3**	**0.65**	**0.10**	**0.98297**
EF2	**32**	**0.73**	**0.10**	**0.98297**
E2AK2	**1**	**65.3**	**0.11**	**0.97469**
RS30	**1**	**2.38**	**0.11**	**0.97469**
UBP14	**4**	**0.69**	**0.11**	**0.97469**
MYDGF	**2**	**0.44**	**0.11**	**0.96257**
FKBP4	**5**	**0.63**	**0.11**	**0.96257**
GDIR2	**10**	**0.70**	**0.11**	**0.96257**
B2CL2	**1**	**0.30**	**0.11**	**0.95861**
K2C6C	**1**	**0.42**	**0.11**	**0.95468**
FUMH	**2**	**0.66**	**0.11**	**0.95078**
DUT	**1**	**2.73**	**0.12**	**0.9393**
SPTN1	**4**	**0.61**	**0.12**	**0.9393**
IF2A	**3**	**0.65**	**0.12**	**0.93554**
AP2A1	**5**	**0.61**	**0.12**	**0.93554**
WDR48	**1**	**0.25**	**0.12**	**0.93181**
BPNT1	**2**	**0.66**	**0.12**	**0.92812**
TBA1A	**1**	**1.82**	**0.12**	**0.92445**
ULA1	**1**	**0.52**	**0.12**	**0.92445**
INS	**2**	**1.16**	**0.12**	**0.92445**
IL16	**2**	**0.62**	**0.12**	**0.92445**
GLRX1	**2**	**0.57**	**0.12**	**0.92445**
HPRT	**3**	**0.62**	**0.12**	**0.92445**
GUAA	**1**	**0.44**	**0.12**	**0.91009**
SCRN1	**3**	**1.55**	**0.12**	**0.91009**
HORN	**4**	**0.43**	**0.12**	**0.91009**
MESD	**1**	**0.68**	**0.12**	**0.90658**
PTGDS	**3**	**3.78**	**0.12**	**0.90658**
TSSK4	**1**	**1.25**	**0.13**	**0.90309**

ELMO1	**2**	**0.74**	**0.13**	**0.90309**
FHL1	**3**	**0.22**	**0.13**	**0.90309**
ABI1	**1**	**0.59**	**0.13**	**0.89963**
CAB39	**1**	**0.51**	**0.13**	**0.8962**
SH3L1	**2**	**0.62**	**0.13**	**0.8962**
EDF1	**3**	**0.64**	**0.13**	**0.8962**
LSP1	**8**	**0.64**	**0.13**	**0.8962**
EIF1	**1**	**1.51**	**0.13**	**0.89279**
5NTC	**1**	**0.52**	**0.13**	**0.89279**
CCL19	**1**	**1,000**	**0.13**	**0.88941**
PTPRS	**5**	**1.54**	**0.13**	**0.88273**
CIRBP	**1**	**0.57**	**0.13**	**0.87943**
CYFP2	**3**	**0.68**	**0.13**	**0.87943**
DCTN1	**3**	**0.55**	**0.13**	**0.87943**
UBP5	**3**	**0.52**	**0.13**	**0.87615**
LEG1	**8**	**0.69**	**0.13**	**0.87615**
PABP1	**10**	**0.71**	**0.13**	**0.8729**
FKBP3	**2**	**0.64**	**0.14**	**0.86967**
K1C14	**5**	**0.19**	**0.14**	**0.86967**
PUR2	**6**	**1.69**	**0.14**	**0.86967**
PPCE	**2**	**0.66**	**0.14**	**0.85699**
QOR	**4**	**0.46**	**0.14**	**0.85699**
NMT1	**3**	**0.66**	**0.14**	**0.85387**
K2C5	**14**	**0.29**	**0.14**	**0.85387**
AP3S1	**1**	**0.59**	**0.14**	**0.84466**
ALDR	**5**	**0.60**	**0.14**	**0.84466**
RBM14	**1**	**1.79**	**0.15**	**0.83565**
PSPC1	**1**	**0.63**	**0.15**	**0.83565**
CHM4B	**2**	**1.48**	**0.15**	**0.83565**
TSYL2	**1**	**2.14**	**0.15**	**0.83268**
NACAM	**2**	**0.69**	**0.15**	**0.83268**
RS20	**2**	**0.70**	**0.15**	**0.82974**
DDX6	**4**	**0.72**	**0.15**	**0.82974**
TCEA1	**4**	**0.45**	**0.15**	**0.82974**
KSYK	**1**	**1.48**	**0.15**	**0.82681**
PCBP2	**6**	**0.76**	**0.15**	**0.82681**
IF6	**4**	**0.81**	**0.15**	**0.82391**
HMGB1	**6**	**0.59**	**0.15**	**0.82102**
EXOS9	**1**	**0.64**	**0.15**	**0.81816**
MICA1	**1**	**0.60**	**0.15**	**0.81816**
DCXR	**2**	**0.67**	**0.16**	**0.80967**
SPTB2	**8**	**0.61**	**0.16**	**0.80967**
G6PI	**15**	**0.71**	**0.16**	**0.80967**
YBOX1	**7**	**0.66**	**0.16**	**0.80688**

IN35	**1**	**1.32**	**0.16**	**0.80134**
AP1G2	**2**	**0.31**	**0.16**	**0.7986**
BTF3	**1**	**0.66**	**0.16**	**0.79588**
4F2	**1**	**0.55**	**0.16**	**0.79588**
K2C78	**3**	**0.25**	**0.16**	**0.79588**
RPR1B	**1**	**0.60**	**0.16**	**0.79048**
RS8	**7**	**0.66**	**0.16**	**0.79048**
ANXA5	**17**	**0.78**	**0.16**	**0.79048**
ROA2	**19**	**0.76**	**0.16**	**0.78781**
PPARD	**1**	**1.18**	**0.16**	**0.78516**
C19L1	**1**	**0.43**	**0.16**	**0.78516**
MP2K2	**1**	**1.60**	**0.17**	**0.78252**
HGFA	**1**	**1.65**	**0.17**	**0.77989**
MFAP1	**1**	**0.51**	**0.17**	**0.77728**
SUMO1	**1**	**0.45**	**0.17**	**0.77728**
S10AA	**2**	**0.69**	**0.17**	**0.77211**
IFNG	**1**	**24.2**	**0.17**	**0.76955**
AGFG1	**2**	**0.60**	**0.17**	**0.76955**
RAB8B	**1**	**2.12**	**0.17**	**0.76195**
ACL6A	**1**	**0.64**	**0.17**	**0.75945**
ISOC1	**2**	**0.55**	**0.17**	**0.75945**
WASP	**4**	**0.61**	**0.17**	**0.75945**
HV373	**1**	**4.68**	**0.18**	**0.75696**
DESP	**3**	**0.16**	**0.18**	**0.75696**
HS90A	**33**	**0.69**	**0.18**	**0.75696**
RS27A	**2**	**0.64**	**0.18**	**0.74232**
ROA1	**12**	**0.74**	**0.18**	**0.73993**
EIF2A	**1**	**0.41**	**0.18**	**0.73518**
RS16	**4**	**0.61**	**0.18**	**0.73518**
THUM1	**1**	**0.63**	**0.19**	**0.73283**
TIGAR	**1**	**0.61**	**0.19**	**0.73283**
UB2J1	**1**	**0.11**	**0.19**	**0.73283**
PPM1F	**2**	**0.65**	**0.19**	**0.72584**
H32	**2**	**0.73**	**0.19**	**0.7167**
PTN11	**2**	**0.63**	**0.19**	**0.71444**
RS11	**2**	**0.64**	**0.20**	**0.70997**
PCBP1	**11**	**0.80**	**0.20**	**0.70997**
RL32	**1**	**0.56**	**0.20**	**0.70553**
HGS	**1**	**0.67**	**0.20**	**0.70333**
RL17	**1**	**0.65**	**0.20**	**0.69897**
TRA2B	**2**	**0.75**	**0.20**	**0.69897**
GMIP	**1**	**0.52**	**0.20**	**0.6968**
RL23A	**3**	**0.65**	**0.20**	**0.69465**
HEBP2	**1**	**0.64**	**0.20**	**0.6925**

ABRX2	**3**	**0.67**	**0.20**	**0.6925**
K1C9	**35**	**0.48**	**0.20**	**0.69037**
K1C10	**27**	**0.30**	**0.21**	**0.68613**
PLCG2	**1**	**0.65**	**0.21**	**0.68403**
RU2A	**1**	**0.51**	**0.21**	**0.67985**
DSC1	**1**	**0.23**	**0.21**	**0.67985**
SARNP	**2**	**0.68**	**0.21**	**0.67778**
ADHX	**5**	**0.64**	**0.21**	**0.67778**
TPD54	**1**	**0.69**	**0.21**	**0.67572**
NIT2	**1**	**0.49**	**0.21**	**0.67366**
RL18	**2**	**0.67**	**0.21**	**0.67366**
GIT2	**2**	**0.50**	**0.21**	**0.67162**
CATG	**1**	**2.80**	**0.21**	**0.66959**
ZRAB2	**1**	**0.60**	**0.22**	**0.66756**
RS10	**1**	**0.78**	**0.22**	**0.65758**
HS71A	**21**	**1.21**	**0.22**	**0.65758**
K22E	**20**	**0.31**	**0.22**	**0.65561**
CYTC	**3**	**0.75**	**0.22**	**0.65365**
AHNK	**5**	**0.74**	**0.22**	**0.65365**
K2C1	**38**	**0.37**	**0.22**	**0.65365**
PSDE	**1**	**0.77**	**0.22**	**0.64975**
H2B1B	**2**	**0.70**	**0.23**	**0.64589**
SGTA	**1**	**0.54**	**0.23**	**0.64016**
BST2	**2**	**2.46**	**0.23**	**0.63827**
TBB6	**4**	**0.61**	**0.23**	**0.63451**
CCD50	**2**	**0.60**	**0.23**	**0.63264**
TYB4	**1**	**0.78**	**0.24**	**0.62893**
CIAO1	**1**	**0.60**	**0.24**	**0.62893**
EIF3M	**2**	**0.67**	**0.24**	**0.62893**
PFKAL	**2**	**0.80**	**0.24**	**0.62709**
BZW1	**1**	**1.62**	**0.24**	**0.62525**
DYH8	**1**	**1.12**	**0.24**	**0.62525**
BLMH	**1**	**0.72**	**0.24**	**0.6216**
RL36	**1**	**0.60**	**0.24**	**0.6216**
MTND	**1**	**0.38**	**0.24**	**0.61798**
TPP2	**4**	**0.72**	**0.24**	**0.61618**
LMNA	**5**	**0.63**	**0.24**	**0.61618**
HEM2	**1**	**0.52**	**0.24**	**0.61439**
DIAP1	**4**	**0.78**	**0.24**	**0.61439**
TPD52	**1**	**0.44**	**0.24**	**0.61261**
RS3A	**9**	**0.72**	**0.24**	**0.61261**
RL27	**2**	**0.72**	**0.25**	**0.60906**
MYPT1	**1**	**0.59**	**0.25**	**0.60555**
RS3	**6**	**0.72**	**0.25**	**0.60555**

FBX6	**1**	**2.89**	**0.25**	**0.60033**
SGT1	**2**	**0.71**	**0.25**	**0.59688**
AMY1	**2**	**0.77**	**0.26**	**0.59346**
PSMD9	**3**	**0.75**	**0.26**	**0.59176**
PA1B2	**1**	**0.77**	**0.26**	**0.59007**
LTOR1	**1**	**0.48**	**0.26**	**0.59007**
NIBA1	**1**	**2.57**	**0.26**	**0.5867**
RAGP1	**2**	**0.65**	**0.26**	**0.5867**
SORCN	**1**	**0.73**	**0.26**	**0.58503**
PTGR1	**2**	**0.37**	**0.26**	**0.58503**
TXNL1	**2**	**0.76**	**0.26**	**0.5817**
SAMH1	**19**	**0.85**	**0.27**	**0.57675**
USP9X	**1**	**0.55**	**0.27**	**0.57349**
OSTF1	**2**	**0.79**	**0.27**	**0.56543**
AL9A1	**1**	**0.63**	**0.27**	**0.56225**
RL4	**5**	**0.72**	**0.28**	**0.55909**
HV64D	**1**	**0.72**	**0.28**	**0.55596**
RPAB3	**1**	**0.37**	**0.28**	**0.5544**
PAIRB	**2**	**0.79**	**0.28**	**0.5544**
RL30	**2**	**0.70**	**0.28**	**0.5544**
PDIA1	**12**	**0.72**	**0.28**	**0.55129**
EZRI	**17**	**0.73**	**0.28**	**0.54975**
DYHC1	**1**	**0.76**	**0.28**	**0.54668**
PRS8	**1**	**1.43**	**0.29**	**0.5391**
RL11	**3**	**1.38**	**0.29**	**0.5391**
CSK2B	**1**	**0.76**	**0.29**	**0.5376**
HMGN2	**2**	**0.65**	**0.30**	**0.52578**
NONO	**3**	**0.80**	**0.30**	**0.52578**
ANXA6	**6**	**0.78**	**0.30**	**0.52578**
SYFA	**1**	**0.71**	**0.30**	**0.52288**
RL21	**1**	**0.69**	**0.30**	**0.52288**
RL10A	**5**	**0.78**	**0.30**	**0.52288**
PSME3	**2**	**0.71**	**0.30**	**0.52143**
LV469	**1**	**2.47**	**0.30**	**0.51999**
PHP14	**1**	**0.37**	**0.30**	**0.51999**
CNTN1	**2**	**1.08**	**0.30**	**0.51856**
U2AF5	**1**	**0.74**	**0.30**	**0.51713**
SKP1	**1**	**0.48**	**0.31**	**0.5157**
A2MG	**1**	**1.41**	**0.31**	**0.51286**
RS7	**2**	**0.67**	**0.31**	**0.51145**
OXSR1	**1**	**0.72**	**0.31**	**0.50864**
RL35A	**1**	**2.00**	**0.31**	**0.50724**
HYOU1	**3**	**1.34**	**0.31**	**0.50724**
BGH3	**7**	**0.81**	**0.31**	**0.50585**

CO4A	**2**	**1.16**	**0.31**	**0.50446**
ABCE1	**1**	**0.61**	**0.31**	**0.50307**
PIN1	**1**	**0.66**	**0.32**	**0.50169**
HNRH1	**9**	**0.84**	**0.32**	**0.50169**
SPB12	**1**	**0.40**	**0.32**	**0.50031**
LRRF1	**1**	**0.86**	**0.32**	**0.49894**
GILT	**1**	**1.34**	**0.32**	**0.49757**
RAB10	**1**	**0.79**	**0.32**	**0.48945**
NPL4	**1**	**0.75**	**0.32**	**0.48945**
DYN2	**3**	**0.70**	**0.32**	**0.48945**
RL3	**6**	**0.75**	**0.32**	**0.48945**
PDCD6	**1**	**0.72**	**0.33**	**0.48812**
BLVRB	**1**	**1.71**	**0.33**	**0.48413**
RS4X	**2**	**0.67**	**0.33**	**0.48413**
HS90B	**17**	**0.79**	**0.33**	**0.4828**
CH60	**3**	**1.63**	**0.33**	**0.48149**
SAFB1	**2**	**0.67**	**0.33**	**0.48017**
URP2	**11**	**0.81**	**0.33**	**0.48017**
FRIL	**1**	**1.88**	**0.33**	**0.47886**
AIF1	**2**	**0.81**	**0.33**	**0.47625**
SAP18	**1**	**0.63**	**0.34**	**0.47237**
PSIP1	**1**	**0.50**	**0.34**	**0.47237**
S10AB	**1**	**0.75**	**0.34**	**0.46852**
GRHPR	**1**	**0.68**	**0.34**	**0.46725**
UBR4	**1**	**2.28**	**0.34**	**0.46597**
GLU2B	**1**	**0.74**	**0.34**	**0.46597**
NUDC	**1**	**0.74**	**0.34**	**0.46471**
NT5D1	**1**	**0.67**	**0.34**	**0.46471**
USO1	**7**	**0.78**	**0.34**	**0.46471**
CAR11	**1**	**0.46**	**0.35**	**0.46218**
IPP2B	**1**	**1.98**	**0.35**	**0.46092**
HSPB1	**1**	**0.64**	**0.35**	**0.45842**
PSD11	**3**	**1.31**	**0.35**	**0.45842**
FPPS	**1**	**1.69**	**0.35**	**0.45223**
FYB1	**1**	**0.41**	**0.35**	**0.451**
RHG25	**1**	**0.71**	**0.36**	**0.44855**
AK1C3	**3**	**0.62**	**0.36**	**0.44855**
DRB5	**2**	**1.51**	**0.36**	**0.44249**
ITB2	**3**	**1.53**	**0.36**	**0.4389**
RS26	**2**	**0.65**	**0.37**	**0.43533**
CLIC1	**12**	**0.82**	**0.37**	**0.43533**
NNRE	**1**	**0.66**	**0.37**	**0.43297**
RL15	**1**	**0.63**	**0.37**	**0.43297**
THIO	**5**	**1.25**	**0.37**	**0.43297**

COMD2	**1**	**1.44**	**0.37**	**0.4318**
RBM3	**1**	**0.56**	**0.37**	**0.4318**
F120A	**1**	**2.39**	**0.37**	**0.43063**
CFAI	**4**	**1.09**	**0.37**	**0.43063**
G6PD	**2**	**0.80**	**0.37**	**0.42829**
MOES	**43**	**0.82**	**0.38**	**0.42597**
CAPR1	**1**	**0.80**	**0.38**	**0.41908**
RL7A	**2**	**0.74**	**0.38**	**0.41908**
KV315	**2**	**1.40**	**0.38**	**0.41794**
VPS29	**1**	**0.66**	**0.38**	**0.4168**
IGJ	**8**	**1.28**	**0.38**	**0.41567**
PSMD2	**3**	**0.82**	**0.39**	**0.41454**
PP1R7	**1**	**0.68**	**0.39**	**0.41117**
LV310	**1**	**1.24**	**0.39**	**0.40894**
RS2	**2**	**0.81**	**0.39**	**0.40561**
PTPRC	**2**	**0.69**	**0.40**	**0.4023**
PSB5	**1**	**0.56**	**0.40**	**0.40121**
UBP15	**1**	**1.40**	**0.40**	**0.39903**
KPYM	**28**	**0.85**	**0.40**	**0.39903**
KV401	**2**	**1.52**	**0.40**	**0.39794**
SAMP	**1**	**1.14**	**0.40**	**0.39577**
BIN2	**4**	**0.77**	**0.40**	**0.39577**
IMDH2	**1**	**1.30**	**0.40**	**0.39469**
JAML	**1**	**0.68**	**0.40**	**0.39469**
CO6	**1**	**1.71**	**0.40**	**0.39362**
UBE2K	**1**	**0.61**	**0.41**	**0.39147**
EF1B	**3**	**0.79**	**0.41**	**0.38722**
P85A	**1**	**0.67**	**0.42**	**0.38091**
ZCCHV	**2**	**1.41**	**0.42**	**0.38091**
SC23B	**4**	**0.83**	**0.42**	**0.38091**
HNRPF	**5**	**0.84**	**0.42**	**0.38091**
FAS	**2**	**1.33**	**0.42**	**0.37469**
RL19	**2**	**0.75**	**0.42**	**0.37469**
PPIB	**7**	**0.82**	**0.42**	**0.37469**
RAVR1	**1**	**0.62**	**0.42**	**0.37366**
RS17	**3**	**0.75**	**0.42**	**0.37366**
ALBU_BOVIN	**95**	**1.08**	**0.42**	**0.37263**
NASP	**5**	**0.82**	**0.43**	**0.37059**
ANT3	**4**	**1.16**	**0.43**	**0.36552**
PP1G	**1**	**0.69**	**0.43**	**0.36351**
LAMC1	**3**	**0.78**	**0.44**	**0.36051**
NUDC1	**1**	**0.68**	**0.44**	**0.35952**
IDHP	**1**	**1.71**	**0.44**	**0.35853**
TES	**1**	**0.79**	**0.44**	**0.35754**

PPIH	**1**	**0.70**	**0.44**	**0.35458**
S10A4	**3**	**0.83**	**0.45**	**0.35164**
UBE3A	**1**	**0.70**	**0.45**	**0.35067**
AB1IP	**2**	**0.81**	**0.45**	**0.34486**
PDIA6	**4**	**0.81**	**0.46**	**0.33724**
SPB9	**12**	**0.78**	**0.47**	**0.33255**
UBA6	**1**	**0.49**	**0.47**	**0.33068**
KVD11	**2**	**1.52**	**0.47**	**0.32606**
FA98B	**2**	**0.71**	**0.48**	**0.32148**
UBCP1	**1**	**0.69**	**0.48**	**0.31695**
FLNA	**49**	**0.85**	**0.48**	**0.31695**
TCOF	**4**	**1.16**	**0.48**	**0.31515**
TCTP	**3**	**0.84**	**0.49**	**0.31247**
EF1A1	**19**	**1.13**	**0.49**	**0.31158**
KV116	**1**	**1.94**	**0.49**	**0.31069**
RINI	**10**	**0.86**	**0.49**	**0.30715**
IF4A1	**9**	**1.19**	**0.50**	**0.30364**
RAP1A	**1**	**0.82**	**0.50**	**0.3019**
FETUA	**1**	**1.22**	**0.50**	**0.29843**
IREB2	**1**	**0.75**	**0.50**	**0.29843**
RALY	**2**	**1.16**	**0.50**	**0.29757**
PSB7	**1**	**0.61**	**0.51**	**0.29585**
MPRI	**1**	**1.43**	**0.51**	**0.29328**
APOH	**1**	**1.09**	**0.51**	**0.29328**
CREG1	**1**	**1.20**	**0.51**	**0.29158**
RS6	**3**	**0.83**	**0.52**	**0.28735**
KAP2	**1**	**0.84**	**0.52**	**0.28567**
ANXA2	**16**	**0.90**	**0.52**	**0.28567**
PSMD3	**3**	**0.85**	**0.52**	**0.284**
SF3A3	**1**	**0.72**	**0.52**	**0.28316**
EHD1	**4**	**0.79**	**0.52**	**0.28067**
ACAP1	**1**	**0.47**	**0.53**	**0.27901**
GARS	**1**	**0.83**	**0.53**	**0.27737**
MAP4	**4**	**0.79**	**0.53**	**0.27737**
MYO1E	**1**	**0.82**	**0.53**	**0.27654**
HV69D	**1**	**1.30**	**0.53**	**0.27572**
APT	**1**	**0.83**	**0.54**	**0.27084**
TRFL	**3**	**0.89**	**0.54**	**0.26922**
TBA1C	**18**	**1.17**	**0.54**	**0.26841**
DRA	**1**	**1.28**	**0.54**	**0.26761**
MY18A	**3**	**0.79**	**0.54**	**0.26761**
CYBP	**2**	**0.85**	**0.54**	**0.2668**
PCNA	**5**	**0.82**	**0.54**	**0.2652**
EMAL4	**1**	**0.74**	**0.55**	**0.2636**

ABC3C	**1**	**1.41**	**0.55**	**0.26122**
HV307	**2**	**1.18**	**0.55**	**0.26043**
A1BG	**1**	**1.10**	**0.55**	**0.25727**
SYTC	**3**	**0.85**	**0.56**	**0.25259**
SPSY	**1**	**1.16**	**0.57**	**0.24718**
RS25	**2**	**0.79**	**0.57**	**0.24718**
BIEA	**2**	**1.21**	**0.57**	**0.24336**
RS18	**2**	**1.30**	**0.57**	**0.2426**
IMB1	**5**	**0.85**	**0.57**	**0.24185**
SRSF7	**2**	**0.86**	**0.57**	**0.24109**
HNRPM	**4**	**1.14**	**0.58**	**0.23958**
CD44	**1**	**0.78**	**0.58**	**0.23882**
YTHD2	**2**	**0.86**	**0.58**	**0.23882**
HV118	**1**	**0.73**	**0.58**	**0.23508**
LV321	**2**	**1.17**	**0.58**	**0.23508**
A2AP	**1**	**1.07**	**0.58**	**0.23359**
SRSF3	**1**	**0.86**	**0.58**	**0.23359**
ACTN1	**3**	**0.86**	**0.58**	**0.23359**
IGHG3	**6**	**0.87**	**0.58**	**0.23359**
PSMD4	**3**	**0.90**	**0.59**	**0.2321**
NHRF1	**1**	**1.33**	**0.59**	**0.22621**
SRSF8	**1**	**0.85**	**0.60**	**0.22113**
ERP44	**1**	**1.19**	**0.60**	**0.2204**
HV321	**2**	**1.27**	**0.60**	**0.21968**
LV147	**1**	**1.19**	**0.60**	**0.21896**
RS5	**4**	**0.92**	**0.60**	**0.21896**
PCNP	**1**	**1.18**	**0.61**	**0.21681**
GBB2	**2**	**0.86**	**0.61**	**0.21467**
CO3A1	**1**	**1.07**	**0.61**	**0.21325**
IGHM	**19**	**1.29**	**0.61**	**0.21325**
DDI2	**1**	**1.16**	**0.61**	**0.21183**
METK2	**3**	**0.93**	**0.62**	**0.21042**
HV102	**1**	**0.64**	**0.62**	**0.20691**
GSH1	**1**	**0.83**	**0.63**	**0.20412**
RL24	**2**	**0.84**	**0.63**	**0.20412**
H2AZ	**2**	**0.77**	**0.63**	**0.20273**
SYAC	**5**	**0.80**	**0.63**	**0.20273**
TRIR	**1**	**1.28**	**0.63**	**0.19928**
IF4B	**3**	**1.17**	**0.63**	**0.1986**
ARI1	**1**	**1.49**	**0.64**	**0.19723**
DDX42	**2**	**1.22**	**0.64**	**0.19723**
RL37	**1**	**1.39**	**0.64**	**0.1945**
KVD24	**1**	**1.24**	**0.64**	**0.19246**
AOC3	**1**	**0.89**	**0.65**	**0.18977**

RL8	**3**	**0.88**	**0.65**	**0.18709**
MK14	**1**	**0.82**	**0.65**	**0.18575**
FIBB	**1**	**0.90**	**0.66**	**0.18243**
PDLI5	**1**	**1.23**	**0.66**	**0.18177**
RANG	**2**	**1.11**	**0.66**	**0.18111**
LV151	**1**	**1.35**	**0.67**	**0.17718**
PDIA4	**10**	**1.11**	**0.67**	**0.17522**
PK3CD	**1**	**0.82**	**0.67**	**0.17393**
SF3A2	**1**	**0.82**	**0.68**	**0.1707**
TETN	**3**	**0.96**	**0.68**	**0.16877**
S10A9	**3**	**1.18**	**0.68**	**0.16813**
THBG	**2**	**1.07**	**0.68**	**0.16685**
RL28	**1**	**1.37**	**0.68**	**0.16558**
IF5A1	**4**	**0.92**	**0.69**	**0.16368**
RLA2	**4**	**0.89**	**0.69**	**0.16368**
LASP1	**2**	**0.87**	**0.69**	**0.16178**
TBB5	**23**	**1.11**	**0.69**	**0.16052**
RL37A	**2**	**1.19**	**0.69**	**0.15927**
ICAL	**3**	**0.89**	**0.69**	**0.15864**
GAPR1	**1**	**1.11**	**0.70**	**0.1549**
TBB4B	**1**	**0.90**	**0.70**	**0.1549**
PICAL	**1**	**0.86**	**0.70**	**0.15304**
PSMD6	**1**	**0.91**	**0.71**	**0.15181**
NSF1C	**2**	**0.92**	**0.71**	**0.15181**
KV320	**2**	**1.21**	**0.71**	**0.1512**
LAMB1	**1**	**0.85**	**0.71**	**0.14997**
CLIC3	**2**	**1.15**	**0.71**	**0.14935**
CORO7	**1**	**1.22**	**0.71**	**0.14874**
DTD1	**1**	**0.74**	**0.71**	**0.14874**
IGHG2	**11**	**1.12**	**0.71**	**0.14874**
RTCB	**1**	**0.88**	**0.71**	**0.14813**
CSK	**1**	**1.11**	**0.71**	**0.14752**
PRS7	**2**	**1.12**	**0.71**	**0.14752**
ENPL	**20**	**0.87**	**0.71**	**0.14752**
S10AC	**1**	**0.83**	**0.71**	**0.1463**
HV374	**4**	**1.16**	**0.71**	**0.1463**
CAP7	**1**	**1.21**	**0.72**	**0.14448**
LEUK	**1**	**0.87**	**0.72**	**0.14388**
KCY	**3**	**0.89**	**0.73**	**0.13966**
ITIH4	**5**	**0.97**	**0.73**	**0.13847**
ACINU	**1**	**1.30**	**0.73**	**0.13549**
RECQ1	**1**	**0.86**	**0.73**	**0.1343**
PEDF	**1**	**1.23**	**0.74**	**0.13312**
ZC3H4	**1**	**0.86**	**0.74**	**0.13312**

KV139	3	1.32	0.74	0.13312
RUVB2	1	0.85	0.74	0.13194
RL14	1	0.89	0.74	0.12901
GIMA4	1	1.23	0.75	0.12784
THRB	1	1.15	0.75	0.12784
IGLL5	9	1.22	0.75	0.12784
PRDX3	1	1.10	0.76	0.12205
IGKC	7	1.12	0.76	0.11862
HV330	4	1.16	0.76	0.11748
RS19	5	1.09	0.76	0.11748
RL6	3	0.90	0.76	0.11691
CAN2	2	1.09	0.77	0.11634
EVL	3	1.10	0.77	0.11634
TYPH	11	0.93	0.77	0.11238
CLIC4	1	0.85	0.78	0.10958
TRI25	2	0.91	0.78	0.10846
ERAP1	6	1.17	0.78	0.10846
PUR9	4	0.94	0.79	0.10237
HV349	1	0.94	0.79	0.10182
RL10	2	0.92	0.79	0.10182
VNN1	1	0.93	0.80	0.09854
HV551	1	0.87	0.80	0.098
IPYR	3	1.06	0.80	0.09691
NCKPL	2	0.91	0.80	0.09528
KV105	1	1.16	0.80	0.09474
BIP	13	0.94	0.81	0.0942
NAMPT	7	1.04	0.81	0.08938
LAMA1	1	1.13	0.82	0.0846
VPS4B	2	1.09	0.82	0.08407
MDHM	2	0.97	0.82	0.08407
IGLC2	3	1.15	0.83	0.08302
TXND5	11	0.94	0.83	0.08249
KVD29	2	1.05	0.83	0.0804
RS24	1	0.92	0.83	0.07988
CO3	7	0.98	0.83	0.07988
TIF1B	1	0.88	0.84	0.07831
OAS1	1	0.87	0.84	0.07624
LSM6	1	0.88	0.84	0.07572
EFHD2	4	1.04	0.84	0.07572
ERF3B	1	1.06	0.84	0.0752
STMN1	2	1.06	0.84	0.07366
IGHA2	4	1.10	0.84	0.07366
SNX6	1	0.95	0.85	0.07212
PPID	1	0.92	0.85	0.07212

GANAB	**4**	**0.95**	**0.85**	**0.07109**
ALBU	**29**	**0.95**	**0.85**	**0.07007**
COTL1	**10**	**1.04**	**0.86**	**0.06803**
ARHG6	**1**	**0.93**	**0.86**	**0.06753**
SPB10	**1**	**0.89**	**0.86**	**0.06753**
RS14	**3**	**1.05**	**0.86**	**0.06651**
RS13	**2**	**1.06**	**0.87**	**0.05948**
CH10	**1**	**1.04**	**0.87**	**0.05899**
AHSA1	**1**	**0.96**	**0.87**	**0.05849**
RL27A	**2**	**0.93**	**0.88**	**0.0575**
ARHG1	**1**	**0.93**	**0.89**	**0.05306**
HPT	**4**	**1.03**	**0.89**	**0.05306**
ROA0	**2**	**1.05**	**0.89**	**0.05257**
HXK3	**3**	**0.96**	**0.89**	**0.05257**
VASP	**10**	**0.97**	**0.89**	**0.05257**
S10A8	**2**	**1.05**	**0.89**	**0.05061**
HEMO	**20**	**0.99**	**0.89**	**0.04964**
IGHD	**3**	**1.12**	**0.89**	**0.04915**
PLD4	**4**	**1.04**	**0.90**	**0.04769**
TFG	**1**	**0.95**	**0.90**	**0.04479**
BAF	**1**	**0.96**	**0.91**	**0.04335**
PPP5	**1**	**1.07**	**0.91**	**0.04287**
IGHA1	**17**	**1.03**	**0.91**	**0.04239**
DEF3	**1**	**0.96**	**0.92**	**0.0381**
AL1B1	**1**	**1.07**	**0.92**	**0.03716**
KAP0	**2**	**1.03**	**0.92**	**0.03574**
C1TC	**2**	**1.03**	**0.92**	**0.03527**
CD97	**1**	**1.09**	**0.92**	**0.0348**
RL13	**5**	**0.97**	**0.92**	**0.03433**
FIBG	**1**	**1.02**	**0.93**	**0.03245**
ANXA1	**14**	**0.97**	**0.93**	**0.03198**
RS15A	**2**	**0.98**	**0.93**	**0.02965**
IGHG4	**2**	**0.94**	**0.93**	**0.02965**
GNAI2	**3**	**1.03**	**0.94**	**0.02641**
SNX1	**1**	**0.98**	**0.95**	**0.02411**
SHBG	**1**	**1.02**	**0.95**	**0.02365**
PSD12	**1**	**0.98**	**0.95**	**0.02182**
ELNE	**4**	**0.97**	**0.95**	**0.02182**
DBNL	**1**	**1.02**	**0.96**	**0.01728**
RS9	**1**	**0.97**	**0.96**	**0.01592**
MNDA	**7**	**1.02**	**0.96**	**0.01592**
PRS6A	**1**	**1.02**	**0.97**	**0.01457**
APOC3	**1**	**1.00**	**0.97**	**0.01457**
IGHG1	**10**	**0.98**	**0.97**	**0.01412**

HV43D	**1**	**0.99**	**0.97**	**0.01323**
AN32E	**2**	**0.99**	**0.97**	**0.01323**
PDCD5	**1**	**1.01**	**0.98**	**0.01055**
AMPL	**14**	**0.99**	**0.98**	**0.01055**
S10A6	**3**	**1.00**	**0.98**	**0.00745**
CALR	**6**	**0.99**	**0.98**	**0.00745**
HV439	**3**	**0.99**	**0.98**	**0.007**
ANXA7	**3**	**0.99**	**0.99**	**0.00656**
RAC2	**3**	**1.00**	**0.99**	**0.00612**
PRTN3	**3**	**0.99**	**0.99**	**0.00612**
HV601	**1**	**1.01**	**0.99**	**0.00568**
RL26	**2**	**1.01**	**0.99**	**0.00524**
RS27L	**2**	**1.01**	**0.99**	**0.00524**
ROA3	**5**	**1.00**	**0.99**	**0.00524**
TBA1B	**3**	**1.00**	**0.99**	**0.0048**
FRIH	**4**	**1.00**	**0.99**	**0.00349**
PERM	**18**	**1.00**	**1.00**	**0.00218**

Table S2: Cell input and sequencing output of the scRNA-seq experiment.

Subject	*Ex vivo*	Flu 6hrs	Flu 24hrs
A	2759	2102	1871
B	2794	2758	2796
C	2535	2450	2206
Total Cells per Condition	8088	7310	6873
Mean reads per cell	55,375	58,215	62,944
Median genes per cell	2,670	2,786	3,758
Doublets	2152	(excluded from analysis)	
Ambiguous	151	(excluded from analysis)	

Table S3: Top 25 enriched genes in the pDC scRNA-seq clusters, by cluster

Gene	avg_logFC	p_val_adj
CLUSTER 0		
FCER1G	2.1024666	0
C12orf75	2.0461347	0
MS4A6A	1.7763833	0
PTPRE	1.6217105	0
TAGLN2	1.5492633	0
ALOX5AP	1.5456969	0
UCP2	1.5376786	0
RNASE6	1.5040914	0
ZFP36L2	1.4492112	0
CST3	1.4329711	0
DERL3	1.430853	0
PLD4	1.3906609	0
PPP1R14B	1.3824086	0
GZMB	1.3781429	0
UGCG	1.3781111	0
TPM2	1.3715611	0
CORO1A	1.3562062	0
CCDC50	1.3482743	0
APP	1.3357869	0
SERPINF1	1.3109063	0
SAMHD1	1.2736115	0
IRF2BP2	1.2652994	0
BCL11A	1.2436351	0
GAPT	1.2419787	0

Gene	avg_logFC	p_val_adj
CLUSTER 1		
IFNA2	3.549002	0
IFNA14	3.36561	0
IFNA6	3.331724	0
IFNB1	3.189481	0
IFNW1	3.158891	0
IFNA17	3.157789	0
IFNA10	3.105879	0
IFNA8	3.069484	0
IFNA5	3.052137	0
IFNA4	2.975805	0
IFNA21	2.94575	0
IFNA1	2.645179	0
IFNA16	2.627565	0
IFNA7	2.594752	0
IFNL1	2.532747	0
PPP1R15A	2.506891	0
PUS10	2.17797	0
IL12A	2.163395	0
CCL3	2.132322	0
CCL4L2	2.089998	0
BCL2A1	2.05844	0
CCL4	2.050363	0
TNF	1.927204	0
NR4A3	1.847532	0

Gene	avg_logFC	p_val_adj
CLUSTER 2		
CCL4	1.702038	0
NCF1	1.598255	0
CCL4L2	1.555877	0
TNF	1.550849	0
NABP1	1.539063	0
HSPA1A	1.527175	0
CD83	1.503993	0
LTB	1.499888	0
HSPA1B	1.280324	0
IFIT2	1.265776	0
CCL3	1.229196	0
CDKN1A	1.226971	0
LTA	1.207946	0
CD40	1.157032	0
LDLRAD4	1.143193	0
HSP90AA1	1.099246	0
CCND2	1.086032	0
TYW3	1.013196	0
RGS1	1.003052	5.5E-284
PPP1R15A	0.996728	0
CALCRL	0.986798	5.6E-192
ATF3	0.967541	1.5E-222
HSPA8	0.92811	0
CCL3L1	0.924779	1.5E-108

Gene	avg_logFC	p_val_adj
CLUSTER 3		
IFI27	1.774985	0
PNOC	1.45832	5.1E-236
TNFSF10	1.341827	0
NEAT1	1.303959	0
IFI6	1.268901	0
CXCL13	1.261145	3.4E-165
FTL	1.205017	0
DUSP5	1.184991	0
CLEC2D	1.167247	0
HIST1H1C	1.135166	0
GAPDH	1.131192	0
ATOX1	1.07544	0
LY6E	1.022173	0
ISG15	1.007866	0
CD38	0.953347	0
SCT	0.948665	1.4E-102
STAT1	0.940203	0
COX5A	0.911369	0
PRDM1	0.8714	0
CASP3	0.869088	0
RSAD2	0.846212	0
SAT1	0.824952	1.9E-293
P2RY10	0.80955	0
TRIB1	0.804212	0

Gene	avg_logFC	p_val_adj
CLUSTER 4		
CD44	1.59138	0
CXCL10	1.428058	0
NMB	1.424394	1.79E-88
LTA	1.221621	0
CXCL11	1.20654	5.9E-127
CD40	1.09721	0
CCL4L2	1.073064	0
SLAMF7	1.063316	0
ID2	1.058091	0
CD83	1.049015	0
CALCRL	1.02762	0
FAM129A	1.025988	0
HSPA1A	1.025384	0
ALCAM	1.018413	0
REL	1.003306	2.5E-303
BCL2A1	0.999812	0
MIR155HG	0.986837	0
TFEC	0.926733	0
CFLAR	0.89305	0
BCL2L1	0.891324	0
CCL4	0.881024	0
NFKB1	0.859435	0
HERC5	0.85307	0
C15orf48	0.843186	1.7E-233

Gene	avg_logFC	p_val_adj
CLUSTER 5		
CXCL13	1.800695	0
CCR7	1.710081	0
TMSB4X	1.693879	0
TUBA1A	1.626864	0
SOX4	1.622532	0
BASP1	1.596734	0
FSCN1	1.446334	0
ZFP36L1	1.398223	0
CD70	1.386201	0
IFI27	1.374846	0
LMNB1	1.326046	0
MARCKS	1.299956	0
IFITM3	1.277995	0
CKB	1.273303	0
LY6E	1.206548	0
GAPDH	1.191684	0
TUBB	1.163445	0
SERPINB1	1.158247	0
RAB9A	1.135876	0
S100A11	1.119249	0
PKM	1.11292	0
CLEC2D	1.112227	0
BID	1.1038	0
TNFSF4	1.0764	0

Gene	avg_logFC	p_val_adj
CLUSTER 6		
MT2A	1.32218	0
EAF2	1.144386	0
GAPDH	1.141306	0
TPI1	1.079615	0
CCR7	1.077027	0
NEAT1	1.016605	0
LDHA	0.976995	0
CLEC2D	0.951816	0
HIST1H1C	0.939304	0
CLEC2B	0.921002	0
MPC2	0.910105	0
TALDO1	0.907717	0
GBP1	0.902111	0
UCHL1	0.899496	0
SPATS2L	0.898494	0
CSRP2	0.898457	0
CMTM7	0.880067	0
PKM	0.879726	0
IFIT1	0.865848	0
IFI27	0.845355	0
CTSC	0.844856	4.2E-275
PRDX1	0.841203	0
FTL	0.839755	0
TYMP	0.829577	0

Gene	avg_logFC	p_val_adj
CLUSTER 7		
LTB	1.369874	0
TYW3	1.01182	0
HSPA1A	0.995985	0
BTG1	0.91905	0
HSPA8	0.870512	0
BBX	0.860342	0
LAP3	0.833926	0
DCPS	0.802439	2.1E-250
CSF2RB	0.795061	3.1E-300
PAG1	0.779625	0
HSP90AA1	0.77947	0
SMC6	0.772563	0
FYB1	0.769351	1.7E-303
SLC12A2	0.768546	5.4E-266
EIF2AK2	0.762227	0
SERPING1	0.759044	0
CRYZ	0.751272	0
TSPAN13	0.745545	0
TCL1A	0.738809	4.82E-61
UBE2L6	0.738395	0
PIM3	0.734997	0
SAMD9	0.730834	0
DDX60	0.725135	0
DNASE1L3	0.721615	0

Gene	avg_logFC	p_val_adj
CLUSTER 8		
CCND2	1.643757	0
KHK	1.294032	7.8E-208
CCL19	1.163064	2.12E-94
MYBL2	1.13259	0
BTG1	1.108356	0
ERICH3	0.859103	5.5E-185
TCL1A	0.827502	3.87E-95
CALR	0.774469	0
NLRP7	0.764753	0
NKG7	0.731817	5.4E-129
SYNGR2	0.716912	1.2E-235
IFI27	0.712686	2.3E-159
CTSZ	0.699129	7.1E-223
GPX4	0.699015	2.3E-254
HSP90B1	0.692583	1.1E-255
WNT10A	0.688987	5.9E-284
TXN	0.686913	2.3E-146
PNOC	0.64691	9.77E-46
COX5A	0.646351	3.3E-268
SCT	0.643599	8.3E-114
VOPP1	0.626633	1.4E-234
BTG2	0.621961	3.7E-132
P2RY6	0.616117	6.4E-221
IGHM	0.61362	2.1E-278

Gene	avg_logFC	p_val_adj
CLUSTER 9		
CXCL11	1.83922	2.1E-253
RSAD2	1.697238	3.1E-295
CXCL10	1.634519	1.1E-204
HSPA1A	1.127474	1.9E-192
BTG1	1.092461	1.5E-159
HMOX1	1.081575	1.58E-61
PARP14	1.023822	2.5E-245
TFEC	1.014234	1.3E-215
AKR1C3	0.996355	2.2E-153
EMP3	0.990186	1.9E-197
ENDOG	0.962219	3.93E-94
CSF2RB	0.949516	2.4E-141
RNF213	0.916677	1.2E-224
HSPA1B	0.894641	1E-132
OAS3	0.883837	2.9E-206
HMGCS1	0.883055	2E-128
CXorf21	0.87998	2.25E-81
SQSTM1	0.830337	1.4E-103
MX1	0.810703	9.9E-192
PIM3	0.808803	3.3E-166
CMPK2	0.801006	3.9E-189
LAP3	0.798204	2.1E-202
DENND1B	0.794405	6.4E-187
CXCL9	0.794203	1.8E-75

Gene	avg_logFC	p_val_adj
CLUSTER 10		
MALAT1	1.213465	2.18E-65
XIST	0.930008	3.13E-83
NEAT1	0.816518	4.92E-39
N4BP2L2	0.689664	3.67E-62
MT-ND5	0.657111	8.48E-56
POLR2J3.1	0.648099	6.96E-39
CHD9	0.622404	3.93E-35
DDX17	0.613559	4.82E-50
MT-CO1	0.580231	7.42E-23
PNISR	0.579236	5.13E-43
HNRNPH1	0.566843	8.18E-44
MT-ND2	0.55709	1.23E-51
ARID1B	0.551148	1.61E-37
ANKRD12	0.545767	1.94E-39
RSRP1	0.543745	1.48E-35
FTX	0.541207	2.98E-36
RBM39	0.532532	1.34E-39
PNN	0.525924	5.7E-32
RNF213	0.522187	8.38E-23
ZNF207	0.521197	1.74E-37
CCNL1	0.519185	7.36E-32
INTS6	0.518957	4.69E-43
ZEB2	0.517619	7.99E-31
CCDC88A	0.510893	1.71E-35

Gene	avg_logFC	p_val_adj
CLUSTER 11		
IFNA1	3.23627	4.3E-270
IFNA16	3.209599	3.2E-243
CYTOR	3.129515	4.2E-286
IFNA4	2.93449	1.8E-241
IFNA21	2.841742	1.1E-259
IFNL1	2.831011	7E-175
IFNA8	2.686882	1.4E-227
IFNA17	2.634333	9.1E-205
IFNA5	2.622508	6.6E-286
MIR4435-2HG	2.60344	0
CCL5	2.537599	1.1E-156
IFNW1	2.459461	3E-239
IFNB1	2.435702	2.8E-228
IFNA10	2.431466	2.5E-222
GPR34	2.346484	0
IFNA6	2.338089	4.1E-118
DKK1	2.331726	0
CXCL8	2.218949	1.8E-295
IFNA14	2.205407	2.6E-209
IFNA7	2.200717	0
IFNE	2.190019	0
CCL3L1	2.161842	2.3E-186
BET1	2.15487	5.1E-254
CCL3	2.075043	4.2E-173

Gene	avg_logFC	p_val_adj
CLUSTER 12		
TMEM267	1.622947	7.6E-122
CTSC	1.412497	7.8E-144
DUSP11	1.365048	9.2E-156
IL12A	1.318169	1.9E-135
GRSF1	1.187564	1.2E-157
PNOC	1.167879	1.3E-42
CCR7	1.152894	2.5E-126
RGS1	1.14512	7.33E-48
IFI27	1.137594	1.1E-107
IGFBP4	1.092764	1.2E-146
HARS	1.083338	3.1E-105
MPC2	1.05995	6.7E-112
CMTM7	1.050202	1.4E-139
CLECL1	1.034513	1.6E-121
CAB39L	1.028687	1.8E-197
MARCKSL1	1.024607	1.8E-80
RNF115	1.019902	7.58E-82
GPR34	0.960441	9.67E-57
CD48	0.943073	1.59E-40
GPR160	0.934233	2.3E-174
CLEC2D	0.919263	7.5E-106
REL	0.917475	2E-110
CRYBG1	0.900703	2.1E-206
ENPP2	0.898065	1.41E-87

Gene	avg_logFC	p_val_adj
CLUSTER 13		
IGHA1	6.122379	2.6E-143
IGLC3	4.976468	1
IGKC	4.781452	1.06E-07
IGHG2	4.599817	7.8E-281
IGLC2	4.517642	1
IGHG4	4.310132	6.6E-148
IGHG1	4.141818	2.1E-167
IGLC7	4.047892	4.12E-33
IGHA2	3.653254	0
IGHM	3.340308	0.000234
IGHG3	3.121733	0
JCHAIN	2.643538	6.5E-102
CD79A	2.092111	0
IGLL5	1.981569	1.8E-283
CD27	1.936166	0
TNFRSF17	1.820993	3.1E-174
POU2AF1	1.777515	0
MZB1	1.743814	2.23E-98
FKBP11	1.612301	6.2E-152
KLF2	1.533383	0
TENT5C	1.450866	0
IGKV4-1	1.360235	0
PIM2	1.184434	1E-108
CD52	1.177831	3.4E-82

Gene	avg_logFC	p_val_adj
CLUSTER 14		
CCND2	1.673926	7.29E-63
PNOC	1.511161	2.7E-20
PCLAF	1.30334	0
TYMS	1.298088	0
PCNA	1.036432	5.1E-85
IFI27	0.984043	8.59E-26
CLSPN	0.973058	0
MCM4	0.956267	0
CEP55	0.922884	2.16E-97
NASP	0.870973	7.03E-52
GAPDH	0.867348	6.01E-34
GINS2	0.862674	0
CKS1B	0.852369	1.79E-49
EDNRB	0.845541	4.69E-40
SCT	0.840879	2.31E-13
CTSC	0.829415	8.46E-18
MCM7	0.811443	3E-107
CHEK1	0.807757	0
CLECL1	0.802669	4.91E-28
H2AFZ	0.802205	5.25E-33
IGHM	0.793891	2.11E-34
MCM3	0.789192	6.32E-61
COX5A	0.781364	8.36E-40
TUBA1B	0.781008	8.57E-40

Gene	avg_logFC	p_val_adj
CLUSTER 15		
PLCG2	4.288975	8.08E-58
HEXIM1	2.578878	1.11E-60
JUN	2.402232	4.64E-42
GADD45B	2.249662	1.04E-45
IER3	2.245483	1.09E-27
NFKBIA	2.214461	7.69E-24
SNHG12	2.176202	2.27E-83
INTS6	2.146815	1.84E-36
IER5	2.109135	8.03E-45
RASD1	2.051184	4.96E-67
IER2	1.985599	1.69E-29
MAFB	1.953123	0
FOS	1.934448	3.7E-144
SRSF7	1.919737	4.55E-39
PMAIP1	1.84026	6.3E-29
SOCS1	1.80901	2.87E-43
EGR1	1.769766	4.5E-264
ID2	1.763281	3.44E-36
PLK2	1.762039	2.1E-301
DNAJB1	1.74626	1.44E-05
TUBB4B	1.724608	1.26E-27
JUNB	1.68239	5.9E-39
CXCL8	1.644674	0.524263
HSPA1B	1.624778	3.9E-31

Gene	avg_logFC	p_val_adj
CLUSTER 16		
GIMAP7	1.851219	0
IL7R	1.678736	1.7E-105
TRBC2	1.656116	0
GZMK	1.640609	0
CD79A	1.640104	5.53E-14
IGLC3	1.604881	1
GIMAP4	1.549939	0
MT2A	1.48322	7.18E-14
EVL	1.457164	5.3E-103
LIMD2	1.346851	7.97E-26
KLF2	1.333666	2.7E-184
IL32	1.263929	0
TRAC	1.210002	0
TRBC1	1.201439	0
CD52	1.186019	5.96E-22
CXCR4	1.185677	2.12E-08
AC245297.3	1.154835	1.72E-48
ITM2B	1.146894	4.57E-30
CD3D	1.11465	0
TRDC	1.091593	1.2E-119
GBP1	1.084558	1.07E-25
CD48	1.049761	1.29E-24
GBP4	1.045723	3.16E-19
SMCHD1	1.031087	4.5E-18

Gene	avg_logFC	p_val_adj
CLUSTER 17		
LYZ	3.203738	0
S100A10	2.288291	5.96E-20
S100A4	2.078156	9.89E-17
COTL1	1.854883	1.88E-53
CST3	1.586403	2.32E-15
PPP1R14A	1.262968	9.48E-31
FOS	1.190144	7.8E-125
FGL2	1.179553	1.1E-104
AXL	1.130974	3.69E-93
AIF1	1.109946	1.34E-13
ITGB2	1.085394	3.83E-20
FCGRT	1.077133	3.17E-14
CORO1A	1.076163	6.27E-12
ANXA1	1.025688	3.08E-42
TXNIP	1.021241	4.54E-10
VIM	1.016814	1.78E-08
OTULINL	0.992976	6.86E-19
SAMHD1	0.974915	1.7E-10
ACTG1	0.964491	8.87E-09
S100A6	0.951039	5.65E-10
DAB2	0.909922	8.88E-13
CCND3	0.885548	4.27E-07
LIMD2	0.877811	6.07E-11
CTSH	0.87696	6.38E-10

Table S4: GaP Subject Demographics

Subject ID	Age	Sex:	BMI:	Medical Conditions (self-reported)	Ethnicity
74178	35	Female	22.04	Drug Allergies, Wears Glasses	Caucasian
74315	34	Female	27.43	Asthma, Seasonal Allergies, Urinary Tract Infections (UTI)	Caucasian
76746	27	Female	20.25	Asthma, Gastroesophageal Reflux Disease (GERD), Wears Glasses, Celiac Disease	Caucasian