

1 **Supplemental Table 1. Flow cytometry antibodies.**

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| Marker                           | Clone      | Vendor         |
|----------------------------------|------------|----------------|
| CD3                              | HIT3a      | BD Bioscience  |
| CD3                              | SK7        | BD Bioscience  |
| CD3                              | UCHT1      | BD Bioscience  |
| CD3                              | UCHT1      | eBioscience    |
| CD3                              | UCHT1      | BioLegend      |
| CD4                              | RPA-T4     | BD Bioscience  |
| CD8                              | RPA-T8     | BD Bioscience  |
| CD127                            | HIL-7R-M21 | BD Bioscience  |
| CD25                             | M-A251     | BD Bioscience  |
| CD25                             | 2A3        | BD Bioscience  |
| FOXP3                            | 236A/E7    | BD Bioscience  |
| FOXP3                            | 259D/C7    | BD Bioscience  |
| Ki67                             | B56        | BD Bioscience  |
| Ki67                             | 20Raj1     | eBioscience    |
| GATA3                            | L50-823    | BD Bioscience  |
| CD279 (PD1)                      | MIH4       | BD Bioscience  |
| CD279 (PD1)                      | MIH4       | eBioscience    |
| TBET                             | O4-46      | BD Bioscience  |
| TBET                             | eBio4B10   | eBioscience    |
| EOMES                            | WD1928     | eBioscience    |
| CD223 (LAG3)                     | 3DS223H    | eBioscience    |
| CD223 (LAG3)                     | 3DS223H    | BioLegend      |
| CD366 (TIM3)                     | F38-2E2    | eBioscience    |
| CD366 (TIM3)                     | F38-2E2    | BioLegend      |
| CD45RA                           | HI100      | BD Bioscience  |
| CD45RA                           | HI100      | eBioscience    |
| CD45RO                           | UCHL1      | BD Bioscience  |
| CD62L                            | DREG-56    | BD Bioscience  |
| CD62L                            | DREG-56    | eBioscience    |
| CD197 (CCR7)                     | 3D2        | BD Bioscience  |
| IFN $\gamma$                     | B27        | BD Bioscience  |
| IFN $\gamma$                     | 4S.B3      | BD Bioscience  |
| CD107a                           | H4A3       | BD Bioscience  |
| phospho-mTOR (S2448)             | O21-404    | BD Bioscience  |
| phospho-S6K (S424)               | ab47379    | Abcam          |
| phospho-AKT (S473)               | M89-61     | BD Bioscience  |
| phospho-SGK1 (Y238)              | Y238       | Abcam          |
| acetyl- $\alpha$ TUBULIN (Lys40) | D20G3      | Cell Signaling |
| acetyl-HISTONE 3 (Lys9, Lys14)   | HIST2H3C   | NovusBio       |

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1 **Supplemental Table 2. Pathway analyses based on Enrichr assessment and KEGG 2106.**

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| KEGG 2016 Open   | Overlap | P-value     | Adjusted P-value | Z-score      | Combined Score | Genes   |
|--|---------|-------------|------------------|--------------|----------------|---|
| T cell receptor signaling pathway_Homo sapiens_hsa04660                          | 16/104  | 0.000040173 | 0.010003017      | -1.881013558 | 19.04022375    | ITK; NFATC2; NFATC1; PIK3R1; MAPK14; CD3D; VAV1; CDC42; PTPRC; IFNG; CD8A; GRAP2; MAP3K8; GRB2; LCP2; PAK4  |
| AGE-RAGE signaling pathway in diabetic complications_Homo sapiens_hsa04933       | 15/101  | 0.000104769 | 0.013043711      | -2.033602679 | 18.63543649    | SMAD4; SMAD3; VEGFB; PRKCA; NFATC1; PIK3R1; MAPK14; TGFBF1; CDC42; DIAPH1; CCND1; PLCG2; BCL2; BAX; JAK2  |
| Ras signaling pathway_Homo sapiens_hsa04014                                      | 24/227  | 0.000295537 | 0.022391294      | -1.956844824 | 15.90272208    | PRKCG; PLA2G2F; NGFR; KSR1; PLA2G2C; INSR; RASGRF2; PDGFB; VEGFB; PRKCA; FASLG; PIK3R1; ETS1; CDC42; EFNA3; GNG2; RASA3; RASSF5; PLCG2; REL; GRB2; FGFR4; RGL2; PAK4  |
| HTLV-I infection_Homo sapiens_hsa05166   | 26/258  | 0.000359699 | 0.022391294      | -1.868059228 | 14.81416098    | CD40; PDGFB; SLC2A1; PIK3R1; ITGAL; ADCY7; CD3D; ETS1; CCND1; CDC27; BUB3; HLA-DPA1; IL15RA; SMAD4; SMAD3; CDKN2A; NFATC2; NFATC1; WNT9A; TGFBF1; CREB1; CDC16; BAX; ANAPC5; TLN1; ATF3   |
| Leukocyte transendothelial migration_Homo sapiens_hsa04670                       | 15/118  | 0.000592369 | 0.029499985      | -1.623625014 | 12.06577527    | PRKCG; ITK; MSN; PRKCA; PIK3R1; MAPK14; F11R; ITGAL; VAV1; GNAI2; CDC42; RASSF5; PLCG2; PTK2B; SIPA1  |
| Hepatitis B_Homo sapiens_hsa05161  | 17/146  | 0.000736597 | 0.0305688        | -1.808920364 | 13.04859068    | PRKCG; SMAD4; SMAD3; DDX3X; NFATC2; PRKCA; FASLG; NFATC1; PIK3R1; TGFBF1; CREB1; CASP8; CCND1; BCL2; BAX; PTK2B; GRB2   |
| Non-small cell lung cancer_Homo sapiens_hsa05223                                 | 9/56    | 0.001399224 | 0.045935991      | -1.857769395 | 12.20895815    | PRKCG; RXRA; CCND1; CDKN2A; RASSF5; PLCG2; PRKCA; GRB2; PIK3R1  |
| Pathways in cancer_Homo sapiens_hsa05200   | 33/397  | 0.001930783 | 0.045935991      | -1.869538519 | 11.68429723    | PDGFB; SLC2A1; FASLG; PIK3R1; ADCY7; ETS1; GNAI2; CDC42; GNG2; RXRA; CASP8; CCND1; RASSF5; PLCG2; TCEB1; BID; PRKCG; SMAD4; SMAD3; CDKN2A; TPM3; PTCH1; DAPK2; VEGFB; PRKCA; TRAF2; WNT9A; TGFBF1; RUNX1; MSH3; BCL2; BAX; GRB2 |
| Rap1 signaling pathway_Homo sapiens_hsa04015                                     | 21/211  | 0.001487683 | 0.045935991      | -1.785469563 | 11.62436318    | PRKCG; MAP2K3; NGFR; INSR; PDGFB; VEGFB; ARAP3; PRKCA; PIK3R1; MAPK14; ITGAL; ADCY7; GNAI2; CDC42; EFNA3; RASSF5; LCP2; TLN1; FGFR4; SKAP1; SIPA1   |
| Osteoclast differentiation_Homo sapiens_hsa04380                                 | 15/132  | 0.001882809 | 0.045935991      | -1.657093966 | 10.39824858    | IFNAR2; NFATC2; TRAF2; NFATC1; PIK3R1; MAPK14; TGFBF1; CYLD; CREB1; IFNG; CTSK; PLCG2; GRB2; LCP2; JUNB   |
| KEGG 2016 Close  | Overlap | P-value     | Adjusted P-value | Z-score      | Combined Score | Genes   |
| mTOR signaling pathway_Homo sapiens_hsa04150                                     | 4/60    | 0.003827604 | 0.563083199      | -1.985962219 | 11.05290507    | IKKBK; RPS6KA2; AKT1; PRKCA   |
| B cell receptor signaling pathway_Homo sapiens_hsa04662                          | 4/73    | 0.007677239 | 0.563083199      | -1.963923608 | 9.563316666    | IKKBK; CD19; AKT1; NFATC1   |
| Osteoclast differentiation_Homo sapiens_hsa04380                                 | 5/132   | 0.013600716 | 0.563083199      | -1.812386465 | 7.788971538    | IKKBK; IFNGR1; AKT1; NFATC1; SQSTM1   |
| Natural killer cell mediated cytotoxicity_Homo sapiens_hsa04650                  | 5/135   | 0.014863311 | 0.563083199      | -1.770765414 | 7.452902785    | NCR2; IFNGR1; PRKCA; NFATC1; HLA-A  |
| Vibrio cholerae infection_Homo sapiens_hsa05110                                  | 3/51    | 0.01704845  | 0.563083199      | -1.793071285 | 7.30084112     | MUC2; ATP6V1H; PRKCA  |
| AGE-RAGE signaling pathway in diabetic complications_Homo sapiens_hsa04933       | 4/101   | 0.022916177 | 0.563083199      | -1.890556431 | 7.138575114    | AKT1; PRKCA; NFATC1; PRKCZ  |
| Acute myeloid leukemia_Homo sapiens_hsa05221                                     | 3/57    | 0.022872176 | 0.563083199      | -1.835519219 | 6.934287151    | IKKBK; AKT1; RUNX1  |
| Insulin resistance_Homo sapiens_hsa04931   | 4/109   | 0.029264773 | 0.600638482      | -1.675947034 | 5.918390383    | IKKBK; RPS6KA2; AKT1; PRKCZ   |
| Epithelial cell signaling in Helicobacter pylori infection_Homo sapiens_hsa05120 | 3/68    | 0.036007798 | 0.600638482      | -1.663268685 | 5.528737957    | IKKBK; PTPRZ1; ATP6V1H  |
| Neurotrophin signaling pathway_Homo sapiens_hsa04722                             | 4/120   | 0.0395401   | 0.600638482      | -1.646061487 | 5.317502753    | IKKBK; RPS6KA2; GAB1; AKT1  |

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