

**Supplementary Table S4. Signature genes list**

<b>Signature</b>	<b>Effector vs exhausted CD8 T cell up</b>
<b>Genes</b>	ABCA2 ACP5 AK3 ANAPC16 ANAPC5 ANXA1 ANXA6 AP1M1 ARFRP1 ARL4C ATP5PO ATP6V0B ATP6V0C AURKAIP1 AXIN1 B4GALT1 BCKDK BLVRA BNIP3L BRAP BSCL2 C8orf33 CAB39L CALU CCNDBP1 CCR2 CDC37 CDKN2DCHFR CIB1 CMAS CMTM7 COMMD7 CORO1B CPT2 CSRP3 CTSA CTSD DAP DBI DCPS DCTN5 DDX41 DEAF1 DGKA DHRS1 DNAJB1 DNMI DPEP1 DPM2 DUS1L DYM EBNA1BP2 EFTUD2 EIF2B4 EIF2B5 EIF2S1 EIF3B EIF3L EIF4A3 EIF6 ELAVL1 ENTPD4 ETS1 FAM117A FAM89B FCGR2B FEZ2 FGFR3 FHL2 GCAT GDAP2 GIT1 GLIPR2 GOLM1 GPC1 GRAMD2B GSTT2 HADHB HCLS1 HERPUD1 HIKESHI HIPK1 HMCES HNRNPAB HSD11B1 ICAM2 IFITM10 IL17RA IL18RAP ISYNA1 ITGAL ITGAX ITGB7 JKAMP KCNJ8 KIAA2013 KLK8 KLRC1 KLRD1 KLRG1 KLRK1 LAMTOR4 LAMTOR5 LDAH LEF1 LGALS9B LRWD1 LSM1 LSM4 LY6H LYSMD1 MACROH2A1MBP MFNG MIEN1 MKNK2 MLXMRPL34 MTCH1 MTMR1 MTSS2 NDUFB6 NSMCE1ORC5 PALD1 PCGF5 PDIA6 PHTF1 PIK3CD PIM2 PKP3 PLAC8 PLD3 PNPO PPIB PPIF PRIM2 PRKAG1 PRKCH PRPSAP1 PSMB2 PSMB3 PSMD13 PTPN6 PTTG1 RABGGTA RACGAP1 RAD17 REPS1 RMC1 RNF14 RNF167 RNPS1 RORA RPN1 RPP25L RPS6KA4 RSU1 SATB1 SCP2 SELENOH SEMA4A SEPTIN6 SETD6 SLC1A5 SLC66A2 SMIM20 SMPD1 SNX1 SRP68 SRPK1 SSNA1 ST13 STK38 SWAP70 TBCB TIAM1 TIMM44 TMC6 TMEM147 TMEM208 TMEM223 TMEM45A TSPAN31 TUBA3C TWF2 TXNL4A UBE2H UBE2Z UBQLN1 USP22 USP5 VAV1 WARS1 WTAP XPNPEP1 YIPF3 ZFYVE19 ZIK1
<b>Source</b>	<a href="https://www.gsea-msigdb.org/gsea/msigdb/human/geneset/GSE3982">https://www.gsea-msigdb.org/gsea/msigdb/human/geneset/GSE3982</a>