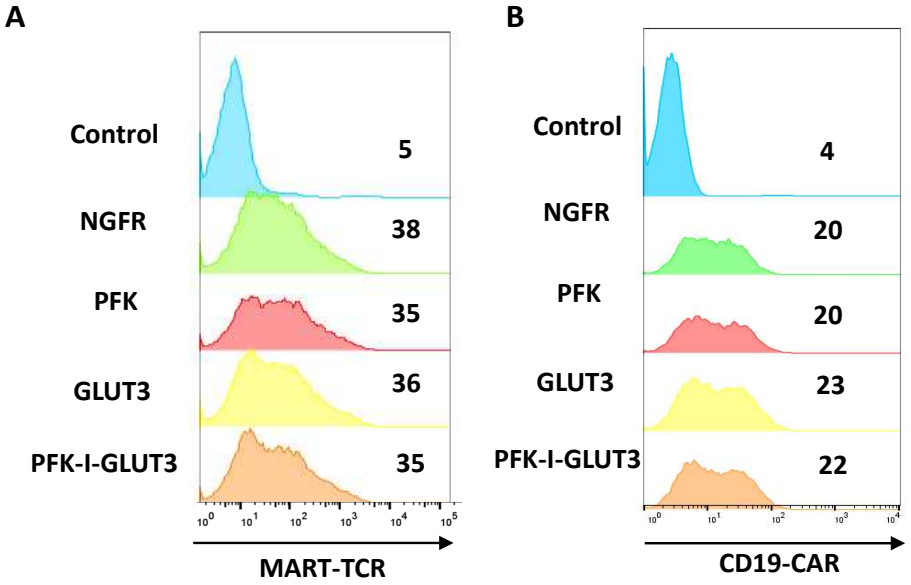
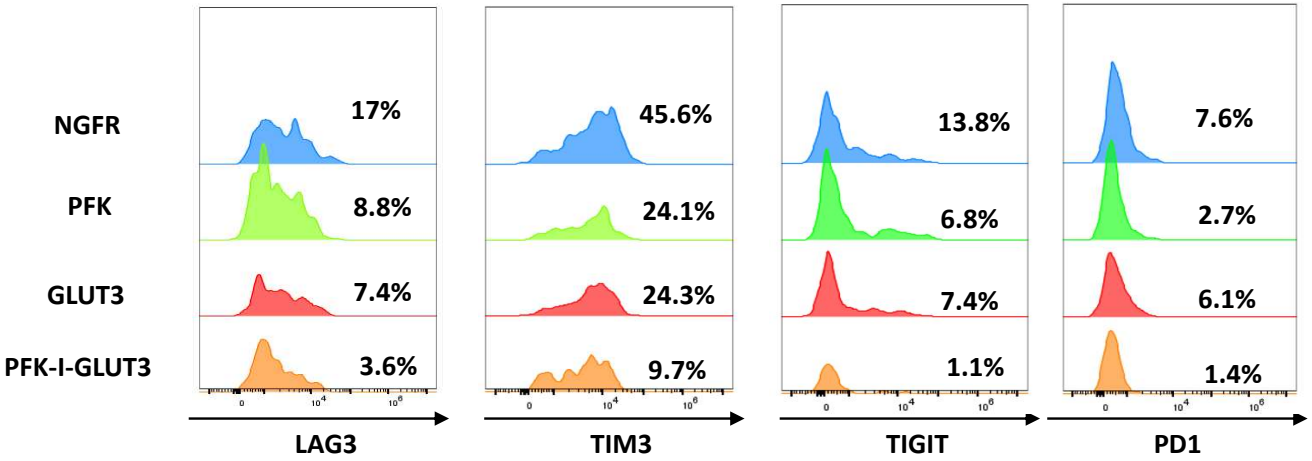
Supplementary Figure S1



Supplementary Figure S1

Primary human PBLs were transduced with either TCR/CAR and different metabolic gens. TCR (**A**) and CAR (**B**) expression was evaluated by flow cytometry 30 days after transduction in NGFR, PFK, GLUT3 and PFK-I-GLUT3 co-transduced population. The MFI is indicated and no significant difference was noted between the different populations.

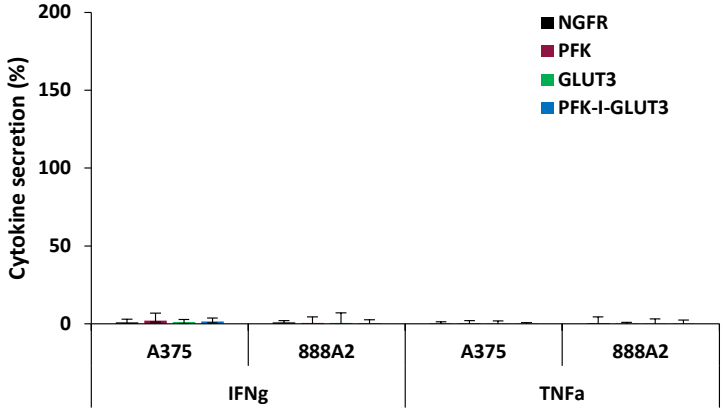
Supplementary Figure 2



Supplementary Figure S2

Representative results from flow cytometric analysis of PFK, GLUT3, PFK-I-GLUT3 and NGFR engineered T-cells stained for LAG3, TIM3, TIGIT and PD1 expression. The percent of positive cells is indicated.

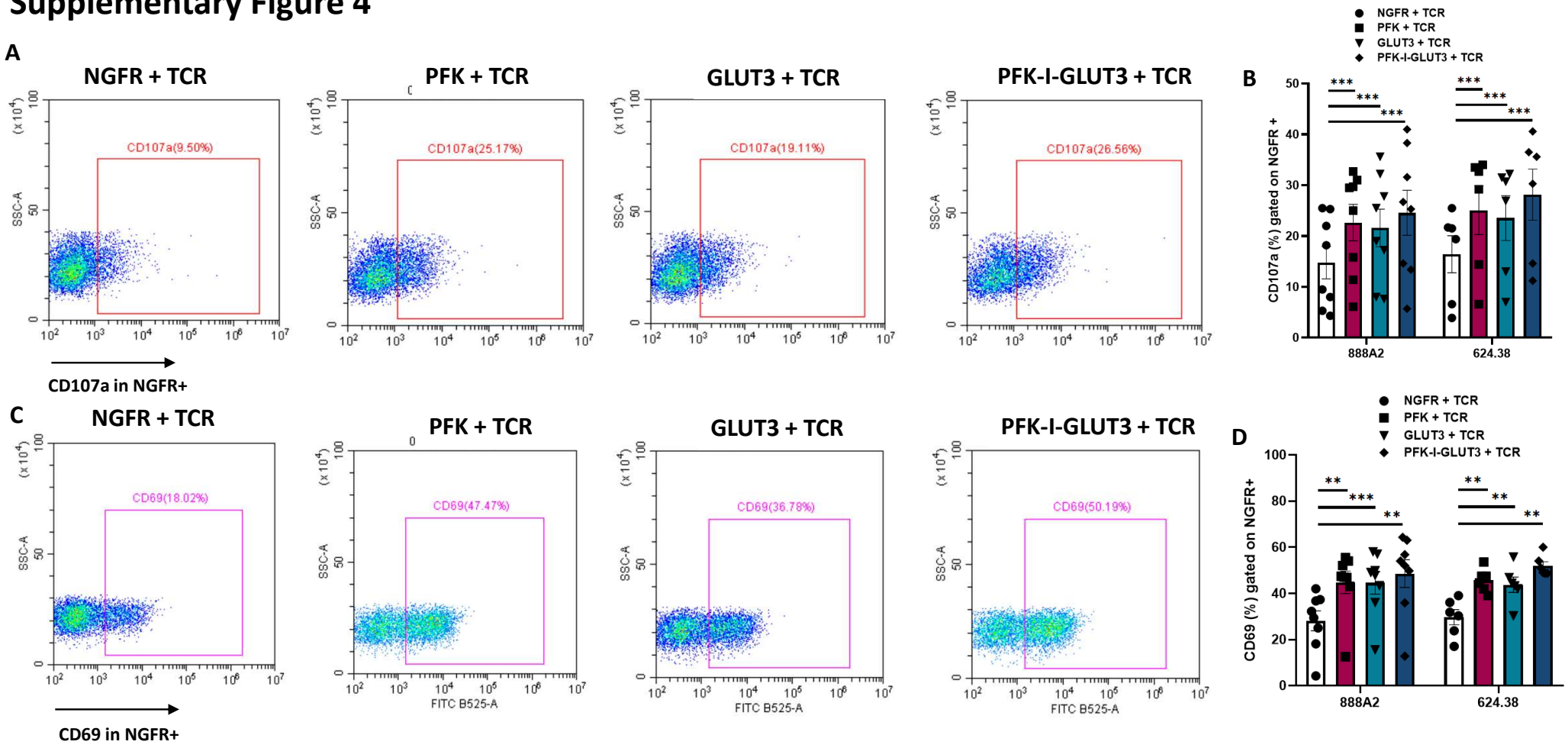
Supplementary Figure 3



Supplementary Figure S3

NGFR, PFK, GLUT3 and PFK-I-GLUT3 (without TCR) were co-cultured overnight with tumor cells. IFNg and TNFa secretion were measured by ELISA. As expected, no significant cytokine secretion was detected in the absence of TCR signal (Signal 1).

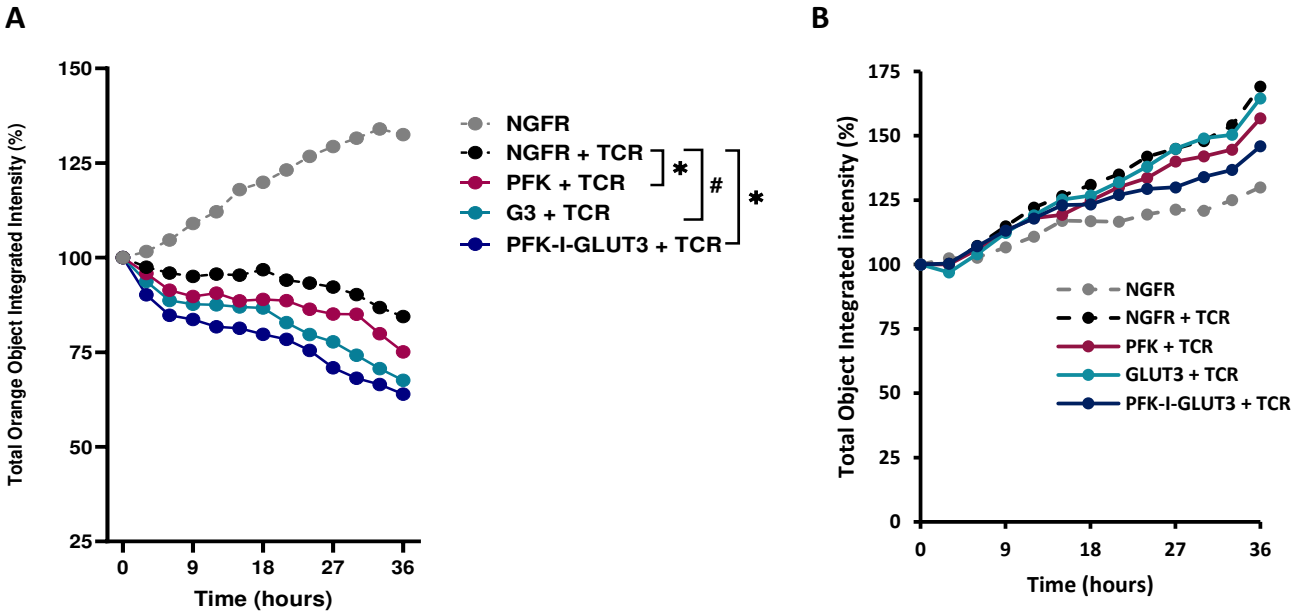
Supplementary Figure 4



Supplementary Figure S4

Primary human PBLs were transduced with a MART-1 specific TCR as well as with PFK/NGFR, Glut3/NGFR, PFK-IRES-Glut3/NGFR or NGFR only (control) CD107a **(A-B)** and CD69 **(C-D)** expression were measured by flow cytometry, gated on the NGFR$^+$ population. Results are presented from 6 independent experiments (with at least 3 different donors). A representative result (**A, C**) and the mean+SEM (**B, D**) are presented. Statistical significance between the groups and control was determined using a *Student's* paired t-test.

Supplementary Figure 5



Supplementary Figure S5

Engineered-T cells (as indicated) were co-cultured with 888A2 (**C**) and negative control A375 (**D**) at a ratio of 2:1 (E:T) for 36 hours. The mCherry^{+} live population was measured using an Incucyte apparatus. This result is representative of 3 different cytotoxicity assay performed with 3 different donors.