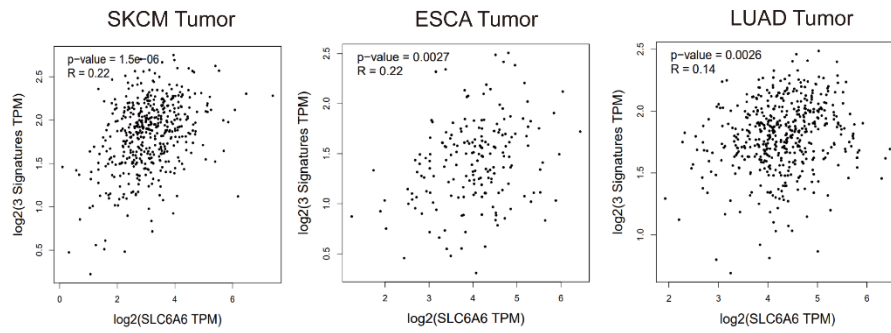
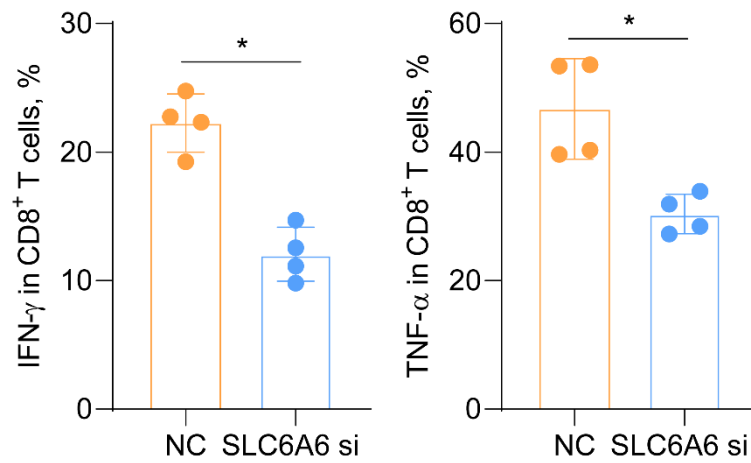


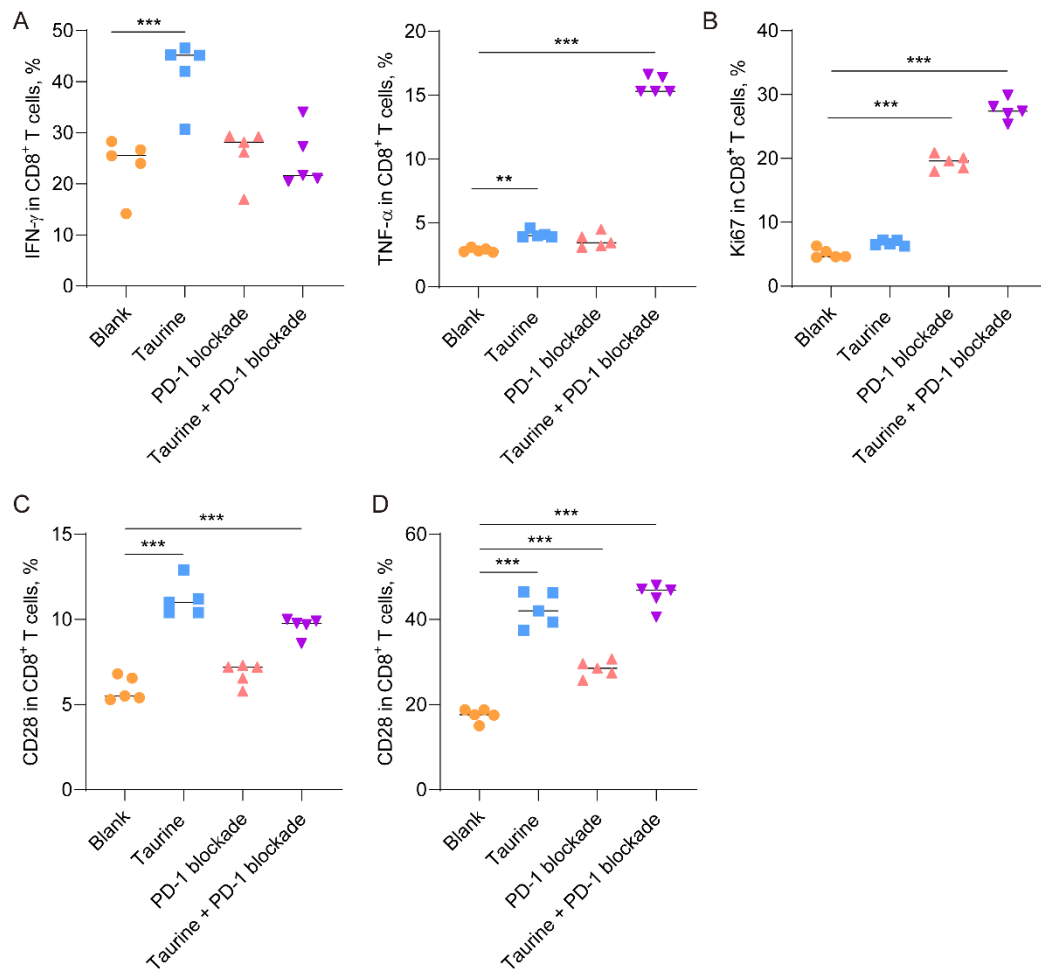
## Supplementary Figure



**Supplementary Fig. 1. The correlation between SLC6A6 and effector T cell signature is investigated in SKCM (left), ESCA (middle) and LUAD (right) tumors using GEPIA.**



**Supplementary Fig. 2. The antitumor function of CD8<sup>+</sup> T cells is declined after SLC6A6 knockdown.** The cytotoxic cytokines IFN- $\gamma$  (Left) and TNF- $\alpha$  (Right) were detected by flow cytometry in NC and SLC6A6 si CD8<sup>+</sup> T cells. The data are presented as means  $\pm$  SEM. Student's *t*-test was used for comparisons between two groups. \* $P$ <0.05.



**Supplementary Fig. 3. The antitumor function of CD8<sup>+</sup> T cells is enhanced by taurine plus PD-1 blockade therapy.** B16 tumor cells were injected into the right flanks of C57BL/6 mice treated with PBS, taurine, PD-1 blockade, or taurine plus PD-1 blockade. (A-C) Cytotoxic cytokine secretion (A), proliferation (B) and activation (C) of CD8<sup>+</sup> T cells in spleen were assayed in the four groups at 17 days. (D) CD28 expression in intratumoral CD8<sup>+</sup> T cell was detected in the four groups at 17 days. The data are presented as means  $\pm$  SEM. Student's *t*-test was used for comparisons between two groups. \*\* $P < 0.01$ , \*\*\* $P < 0.001$ .

**Supplementary Table 1. Clinical information of LUAD patients in this study**

<b>Number</b>	<b>Gender</b>	<b>Age</b>	<b>Differentiation</b>	<b>Surgery</b>	<b>TNM</b>	<b>Clinical outcome</b>
P1	woman	67	unknown	no	T4N3M1a	NR
P2	man	71	meddle-low	yes	T3N2M0	NR
P3	man	56	unknown	no	TxN2M1	NR
P4	man	48	unknown	no	T4N2M0	NR
P5	woman	56	unknown	no	T2N3M1	NR
P6	man	54	unknown	yes	T3N0M0	NR
P7	woman	65	unknown	no	TxN3M0	R
P8	woman	52	unknown	no	T4N3M1c	R
P9	woman	50	unknown	no	TxN3M1	R
P10	man	58	low	no	T1N2M0	R
P11	man	59	low	no	TxN3M1c	R
P12	woman	57	low	no	T3N2M0	R
P13	man	58	unknown	no	T3N0M0	R
P14	man	67	low	yes	T1N2M0	R
P15	woman	75	low	no	T2N3M1	R
P16	man	55	unknown	no	T4N3M1c	R
P17	man	47	unknown	no	TxNxM1	R
P18	man	45	low	yes	T0N3M1	R
P19	man	57	low	no	T3N0M0	R
P20	man	56	middle	yes	TxN3M0	R
P21	man	62	low	yes	TxN2M0	R

**Supplementary Table 2. Correlation analysis of metabolic pathway and CD8<sup>+</sup> T cells in LUAD patients using TCGA**

<b>Metabolic pathway</b>	<b>Correlation</b>	<b>p value</b>
HALLMARK_XENOBIOTIC_METABOLISM	0.476	4.78E-31
HALLMARK_FATTY_ACID_METABOLISM	0.321	4.48E-14
HALLMARK_HEME_METABOLISM	0.501	9.03E-35
HALLMARK_BILE_ACID_METABOLISM	0.425	1.67E-24
KEGG_GLYCEROLIPID_METABOLISM	0.386	4.05E-20
KEGG_GLYCEROPHOSPHOLIPID_METABOLISM	0.437	5.33E-26
KEGG_ETHER_LIPID_METABOLISM	0.451	8.89E-28
KEGG_ARACHIDONIC_ACID_METABOLISM	0.373	7.53E-19
KEGG_LINOLEIC_ACID_METABOLISM	0.27	3.15E-10
KEGG_ALPHA_LINOLENIC_ACID_METABOLISM	0.338	1.64E-15
KEGG_SPHINGOLIPID_METABOLISM	0.421	5.15E-24
KEGG_RIBOFLAVIN_METABOLISM	0.063	0.145921
KEGG_NICOTINATE_AND_NICOTINAMIDE_METABOLISM	0.339	1.31E-15
KEGG_FRUCTOSE_AND_MANNOSE_METABOLISM	0.314	1.85E-13
KEGG_GALACTOSE_METABOLISM	0.46	6.67E-29
KEGG_ASCORBATE_AND_ALDARATE_METABOLISM	-0.041	0.348668
KEGG_FATTY_ACID_METABOLISM	0.199	4.09E-06
KEGG_PURINE_METABOLISM	0.388	2.47E-20
KEGG_PYRIMIDINE_METABOLISM	0.322	3.44E-14
KEGG_ALANINE_ASPARTATE_AND_GLUTAMATE_METABOLISM	0.378	2.42E-19
KEGG_GLYCINE_SERINE_AND_THREONINE_METABOLISM	0.312	2.61E-13
KEGG_CYSTEINE_AND_METHIONINE_METABOLISM	0.307	6.29E-13
KEGG_ARGININE_AND_PROLINE_METABOLISM	0.291	1.03E-11
KEGG_HISTIDINE_METABOLISM	0.263	9.65E-10
KEGG_TYROSINE_METABOLISM	0.303	1.16E-12
KEGG_PHENYLALANINE_METABOLISM	0.312	2.33E-13
KEGG_TRYPTOPHAN_METABOLISM	0.501	9.43E-35
KEGG_BETA_ALANINE_METABOLISM	0.367	3.62E-18
KEGG_TAURINE_AND_HYPOTAURINE_METABOLISM	0.292	8.56E-12
KEGG_SELENOAMINO_ACID_METABOLISM	0.259	1.58E-09
KEGG_GLUTATHIONE_METABOLISM	0.253	3.95E-09

KEGG_STARCH_AND_SUCROSE_METABOLISM	0.053	0.22216
KEGG_AMINO_SUGAR_AND_NUCLEOTIDE_SUGAR_METABOLISM	0.503	4.61E-35
KEGG_INOSITOL_PHOSPHATE_METABOLISM	0.331	6.01E-15
KEGG_PYRUVATE_METABOLISM	0.167	0.000123
KEGG_GLYOXYLATE_AND_DICARBOXYLATE_METABOLISM	0.25	6.52E-09
KEGG_BUTANOATE_METABOLISM	0.158	0.000269
KEGG_RETINOL_METABOLISM	0.078	0.072945
KEGG_PORPHYRIN_AND_CHLOROPHYLL_METABOLISM	0.02	0.651121
KEGG_NITROGEN_METABOLISM	0.067	0.126791
KEGG_SULFUR_METABOLISM	0.309	4.14E-13
KEGG_METABOLISM_OF_XENOBIOTICS_BY_CYTOCHROME_P450	0.085	0.05239
KEGG_DRUG_METABOLISM_CYTOCHROME_P450	0.096	0.027082
KEGG_DRUG_METABOLISM_OTHER_ENZYMES	0.076	0.08103

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