

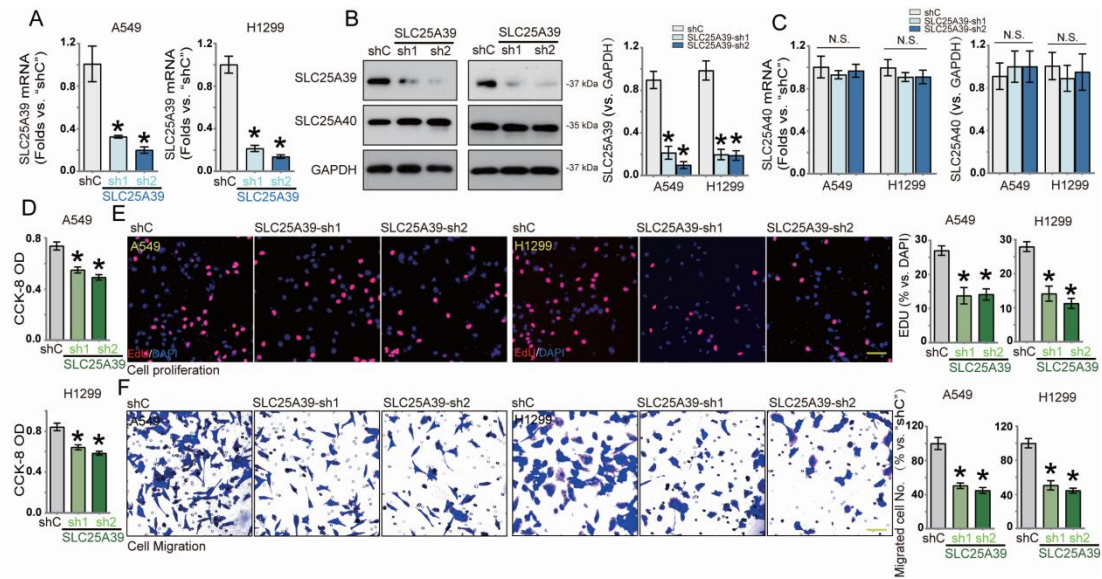


Figure S1: A549 and H1299 cells stably expressing SLC25A39 shRNA (SLC25A39-sh1, SLC25A39-sh2) or nonsense control shRNA (shC) were constructed. The mRNA expression of SLC25A39 and SLC25A40 in the cells was detected by qRT-PCR (A, C), and the protein levels of SLC25A39 and SLC25A40 were detected by Western blot (B, C). After further cell culture, their viability (D), proliferation (E), and migration ability (F) were evaluated, and these results were quantitatively analyzed. * $P < 0.05$ versus "shC". The experiments were repeated thrice. Scale bar = 100 μm . GAPDH was used as an internal reference.

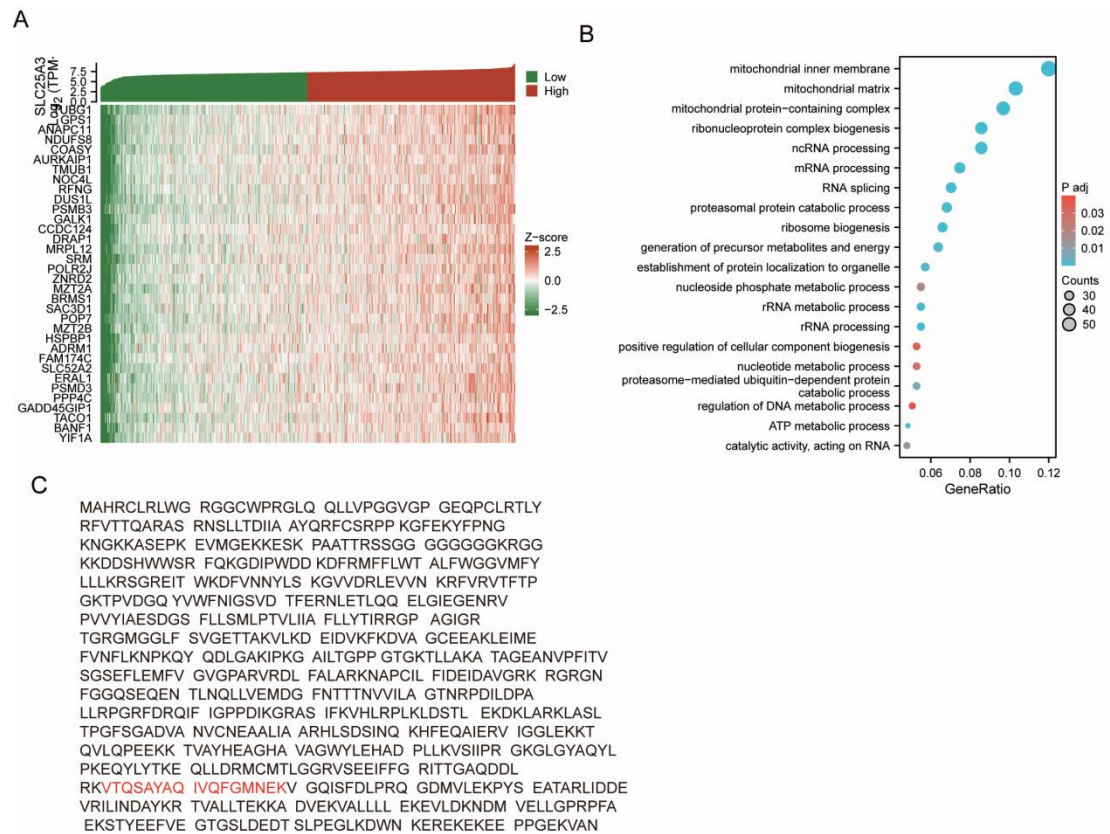


Figure S2:The top 500 genes highly correlated with SLC25A39 expression were screened in the TCGA database, and the correlation of the top 35 genes was displayed through a heat map (A). We show the results of the TOP 20 correlations in the GO analysis (B).At the same time, the specific peptide (red) of AFG3L2 was displayed (C).

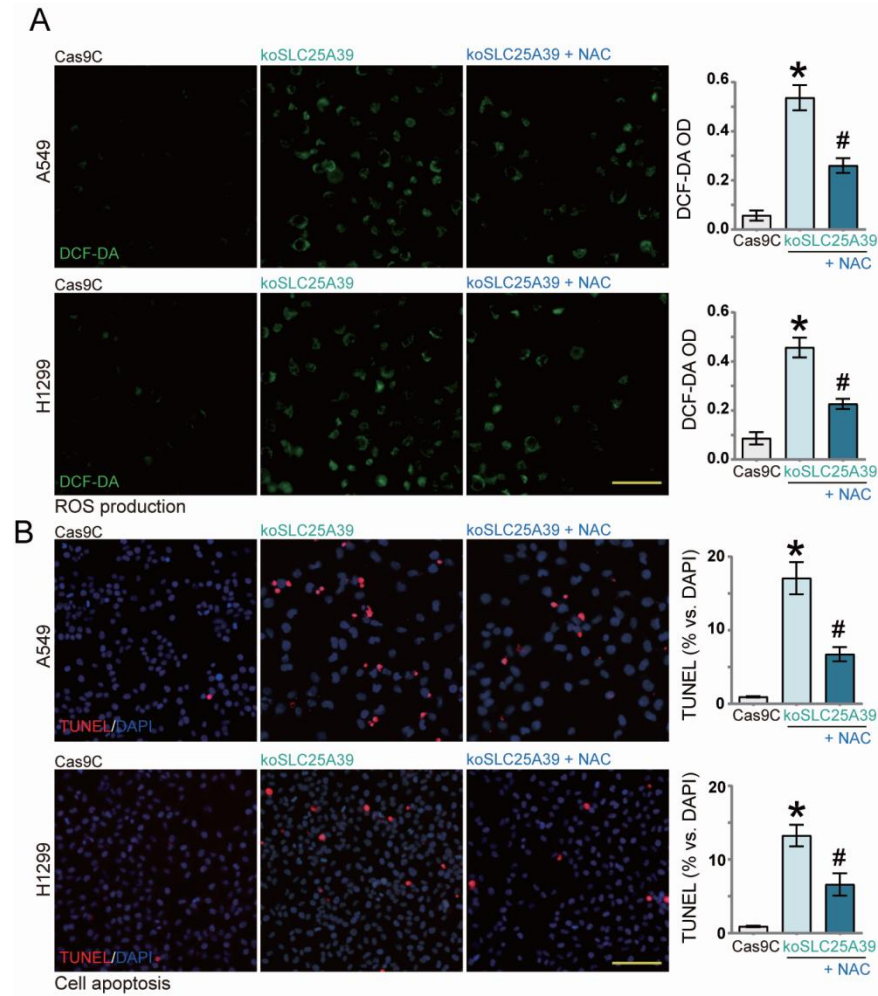


Figure S3:After adding the mitochondrial ROS scavenger N-acetylcysteine (NAC, 5 mM) to SLC25A39 knockout A549 and H1299 cells, the intracellular ROS levels were detected (Figure A), and cell apoptosis was evaluated by TUNEL staining (Figure B). * $P < 0.05$ versus "Cas9C". # $P < 0.05$ versus "koSLC25A39". The experiments were repeated thrice. Scale bar = 100 μm .

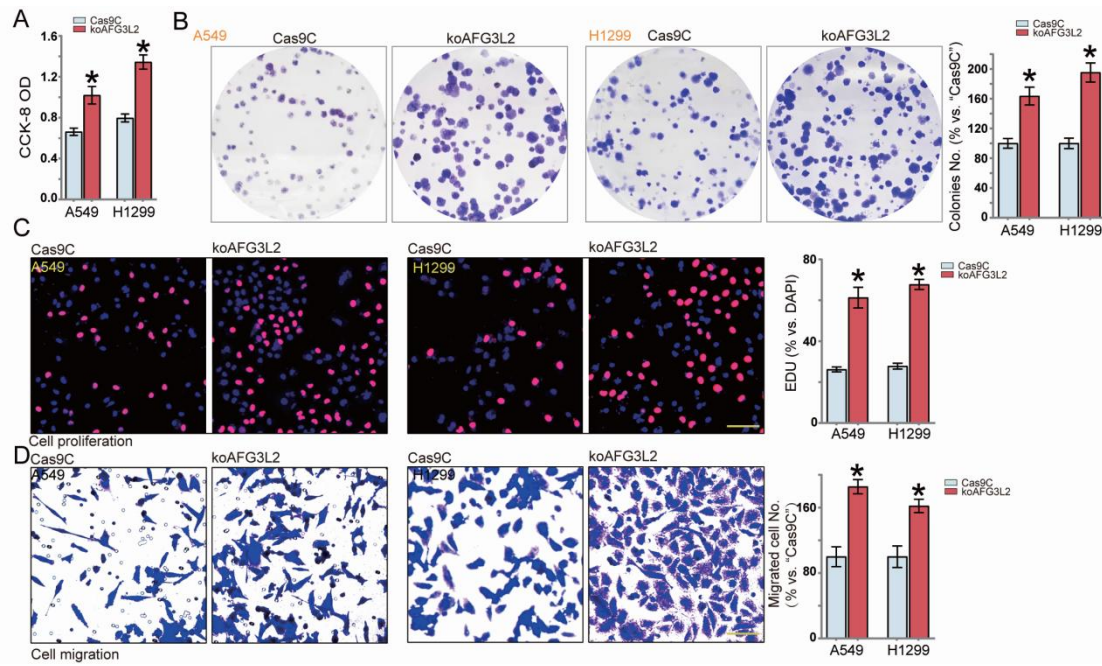


Figure S4: We constructed A549 and H1299 cell lines stably expressing Cas9-AFG3L2 (koAFG3L2) or Cas9 empty vector (Cas9C). After the indicated time, the viability, proliferation and migration abilities of these cells were evaluated by CCK-8 assay (A), colony formation assay (B), EdU staining (C) and Transwell assay (D), and the results were quantified. * $P < 0.05$ versus "Cas9C". The experiments were repeated thrice. Scale bar = 100 μm .

Table S1

	Gender	Age	T	N	M	TNM
Patient-1	Male	45	T1a	N0	M0	IA1
Patient-2	Male	62	T3	N1b	M0	IIIA
Patient-3	Female	80	T1c	N1a	M0	IIB
Patient-4	Female	65	T2a	N0	M0	IB
Patient-5	Female	57	T2a	N0	M0	IB
Patient-6	Female	66	T1a	N0	M0	IA1
Patient-7	Male	62	T1b	N0	M0	IA2
Patient-8	Female	60	T1b	N0	M0	IA2
Patient-9	Female	59	T1b	N0	M0	IA2
Patient-10	Male	72	T1a	N0	M0	IA1
Patient-11	Female	74	T1c	N0	M0	IA3
Patient-12	Female	79	T1b	N0	M0	IA2
Patient-13	Male	58	T1b	N0	M0	IA2
Patient-14	Female	69	T1c	N0	M0	IA3
Patient-15	Female	67	T1c	N0	M0	IA3
Patient-16	Female	63	T1b	N0	M0	IA2
Patient-17	Female	74	T1a	N2b	M0	IIIA
Patient-18	Female	76	T1a	N0	M0	IA1
Patient-19	Female	70	T3	N1b	M0	IIIA
Patient-20	Male	47	T2a	N1	M1	IV
Patient-21	Female	52	T1a	N0	M0	IA1

Uncropped
blot

