

Supplementary Material

1 Supplementary Tables

1.1 Table1 The information of related primer sequences in the study. (All primer sequences were designed using Primer-BLAST (NCBI))

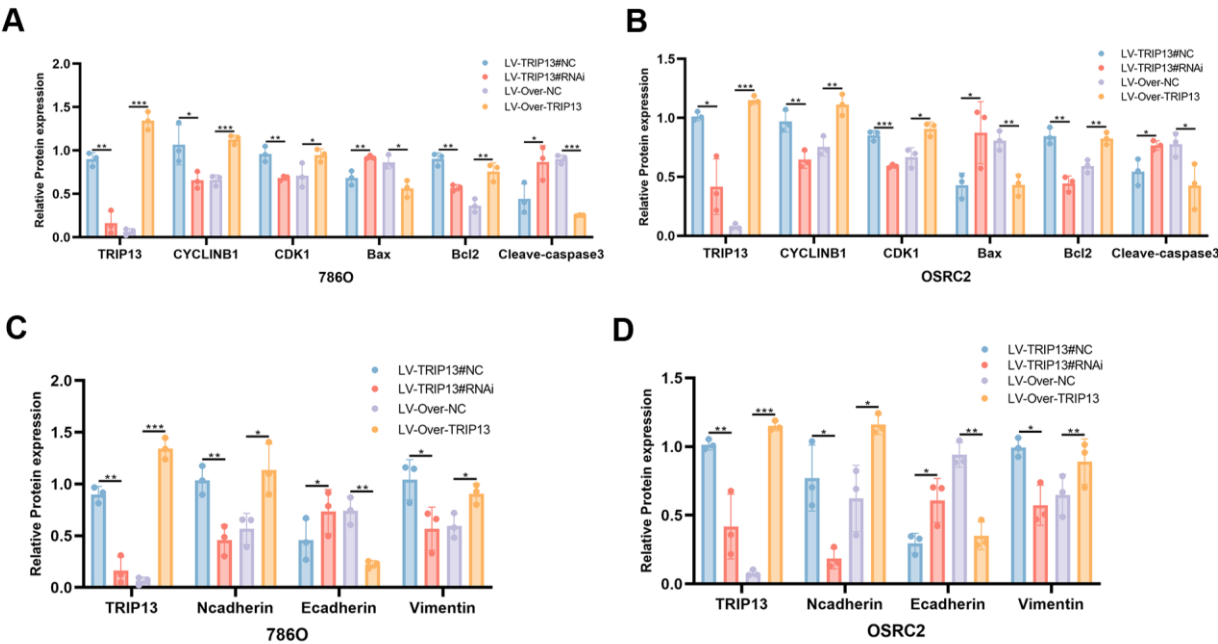
TRIP13	F-5'- TCGGAAAGTGGCAAGCTGGTAAC- 3'	R-5'- CATTTCTGGGCGGCTGTGAGAC-3'
NUSAP1	F-5'- GGTGCAAGACTGTCCGTGTGG-3'	R-5'- TGGTGCTCGTCTGGTGGAGAAG- 3'
GAPDH	F-5'- GTGGACCTGACCTGCCGTCTAG- 3'	R-5'- GAGTGGGTGTCTGCTGTTGAAGTC- 3'

1.2 Table2 The complete information of all primary antibodies employed in the study.

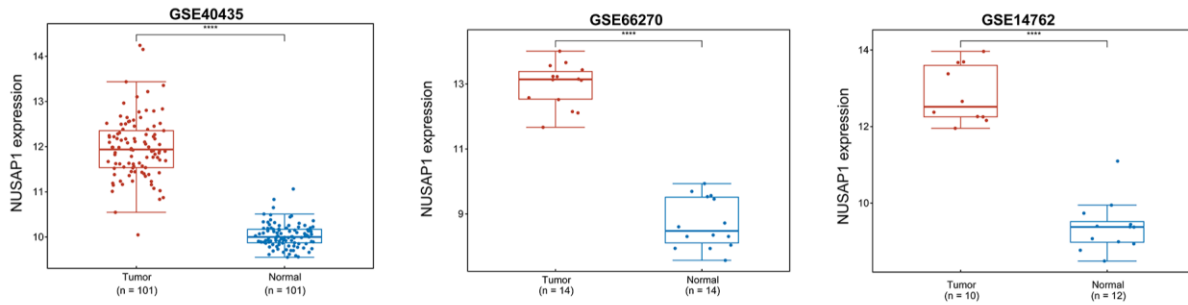
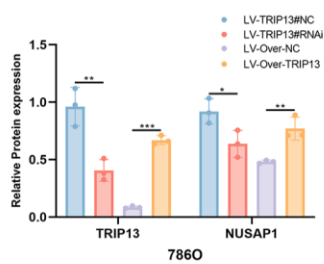
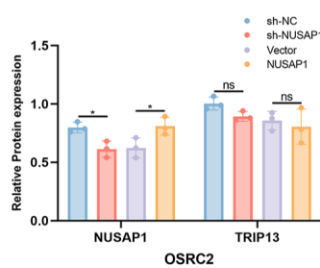
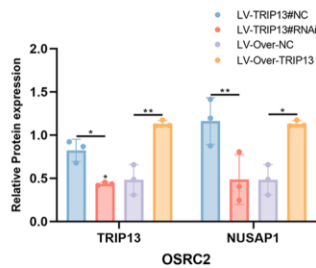
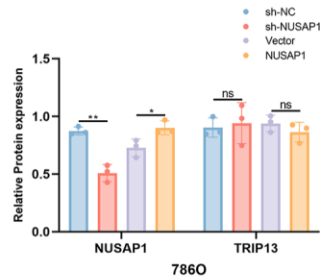
Primary antibody	Catalogue Number	Company	City	Country
TRIP13	67759-1-Ig	Proteintech	MA	USA
TRIP13	19602-1-AP	Proteintech	MA	USA
NUSAP1	CL488-12024	Proteintech	MA	USA
NUSAP1	12024-1-AP	Proteintech	MA	USA
N-cadherin	22018-1-AP	Proteintech	MA	USA
E-cadherin	ET1607-75	Huabio	Hangzhou	China
Vimentin	ET1610-39	Huabio	Hangzhou	China

p-Pi3K	341468	Zenbio	Chengdu	China
Pi3k	251221	Zenbio	Chengdu	China
p-AKT	66444-1-Ig	Proteintech	MA	USA
AKT	10176-2-AP	Proteintech	MA	USA
p-mTOR	67778-1-Ig	Proteintech	MA	USA
mTOR	66888-1-Ig	Proteintech	MA	USA
Bcl2	12789-1-AP	Proteintech	MA	USA
Bax	50599-2-Ig	Proteintech	MA	USA
Cleaved-caspase-3	#9664	CST	MA	USA
CDK1	19532-1-AP	Proteintech	MA	USA
Cyclin B1	55004-1-AP	Proteintech	MA	USA
GAPDH	60004-1-Ig	Proteintech	MA	USA
IgG	30000-0-AP	Proteintech	MA	USA

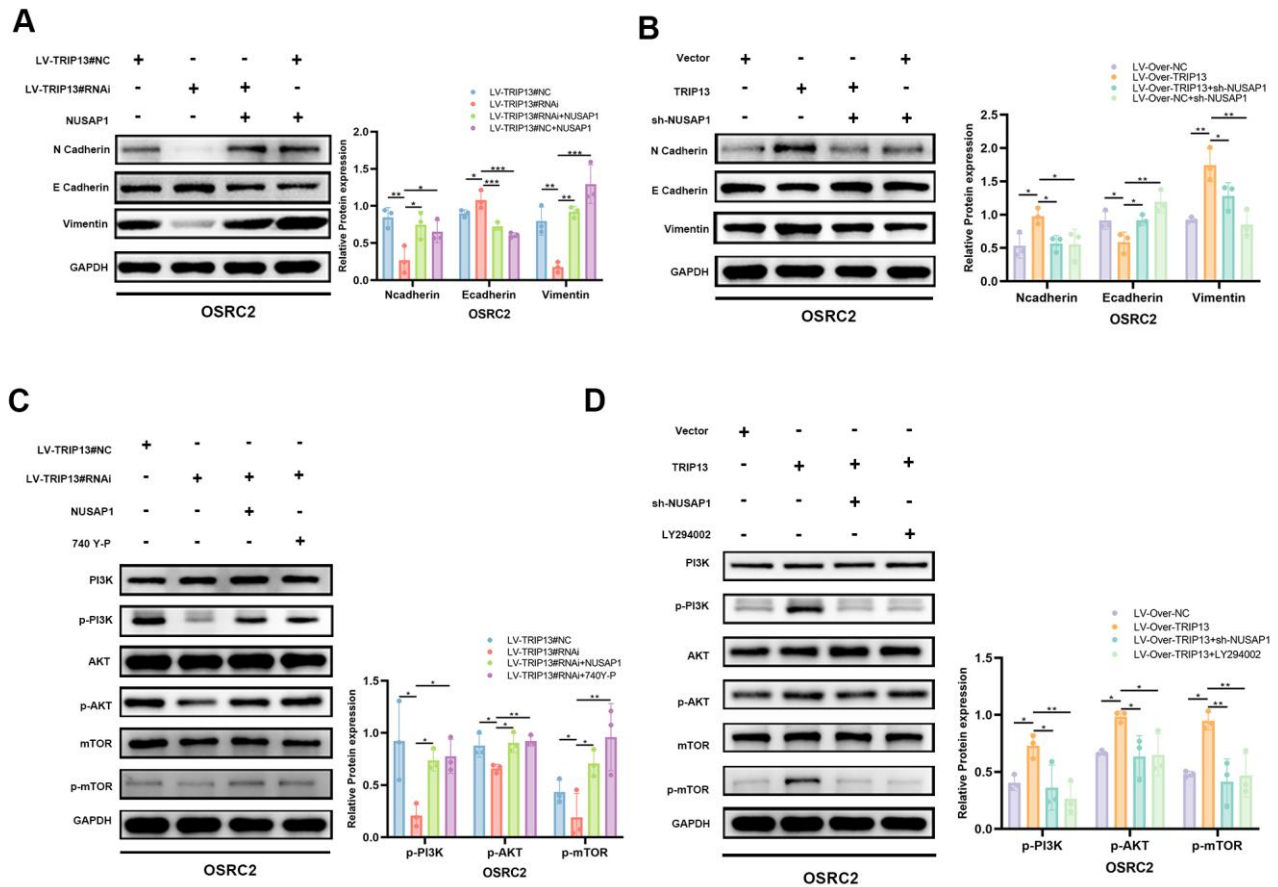
2 Supplementary Figures



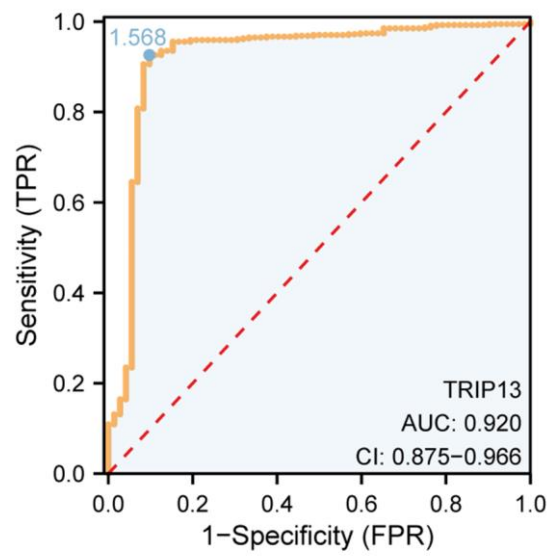
Supplementary Figure 1. (A, B) The cell cycle and apoptotic markers were detected via western blot in 786O (A) and OSRC2 (B) cell lines after lentiviral infection. (C, D) The alteration of EMT-related markers following TRIP13 knockdown and overexpression in 786O (C) and OSRC2 (D) cells via western blot.

A**B****C**

Supplementary Figure 2. (A) NUSAP1 expression levels change across tumor and normal tissues from the GEO database (GSE40435, GSE66270, GSE14762). **(B)** The correlation between TRIP13 and NUSAP1 expression in 786O and OSRC2 cell lines after TRIP13 knockdown through western blot. **(C)** The correlation between TRIP13 and NUSAP1 expression in 786O and OSRC2 cell lines after NUSAP1 knockdown through western blot.



Supplementary Figure 3. (A) The impact of NUSAP1 overexpression on EMT markers in TRIP13 knockdown in OSRC2 cells by western blot. **(B)** The alteration of EMT markers in TRIP13-overexpressing OSRC2 cells following NUSAP1 knockdown by western blot. **(C)** The fluctuation of NUSAP1 overexpression or PI3K agonist treatment on p-PI3K, p-AKT, and p-mTOR in OSRC2 cells of TRIP13 knockdown by western blot. **(D)** The shift of p-PI3K, p-AKT, and p-mTOR in OSRC2 cell lines of TRIP13-overexpressing following NUSAP1 knockdown or PI3K inhibition by western blot.



Supplementary Figure 4. The diagnostic predictive value of TRIP13 expression for ccRCC by ROC curve analysis.