

Supplementary FigureS1 CircST3GAL6 inhibits the proliferation, metastasis and promotes apoptosis, autophagy of GC cells in vitro. **a.** The proliferation of SGC-7901 cells transfected with circST3GAL6 siRNA or an overexpression plasmid by a CCK-8 assay. **b-c.** Assessment of SGC-7901 cell proliferation by colony formation assay and EdU assay **d.**

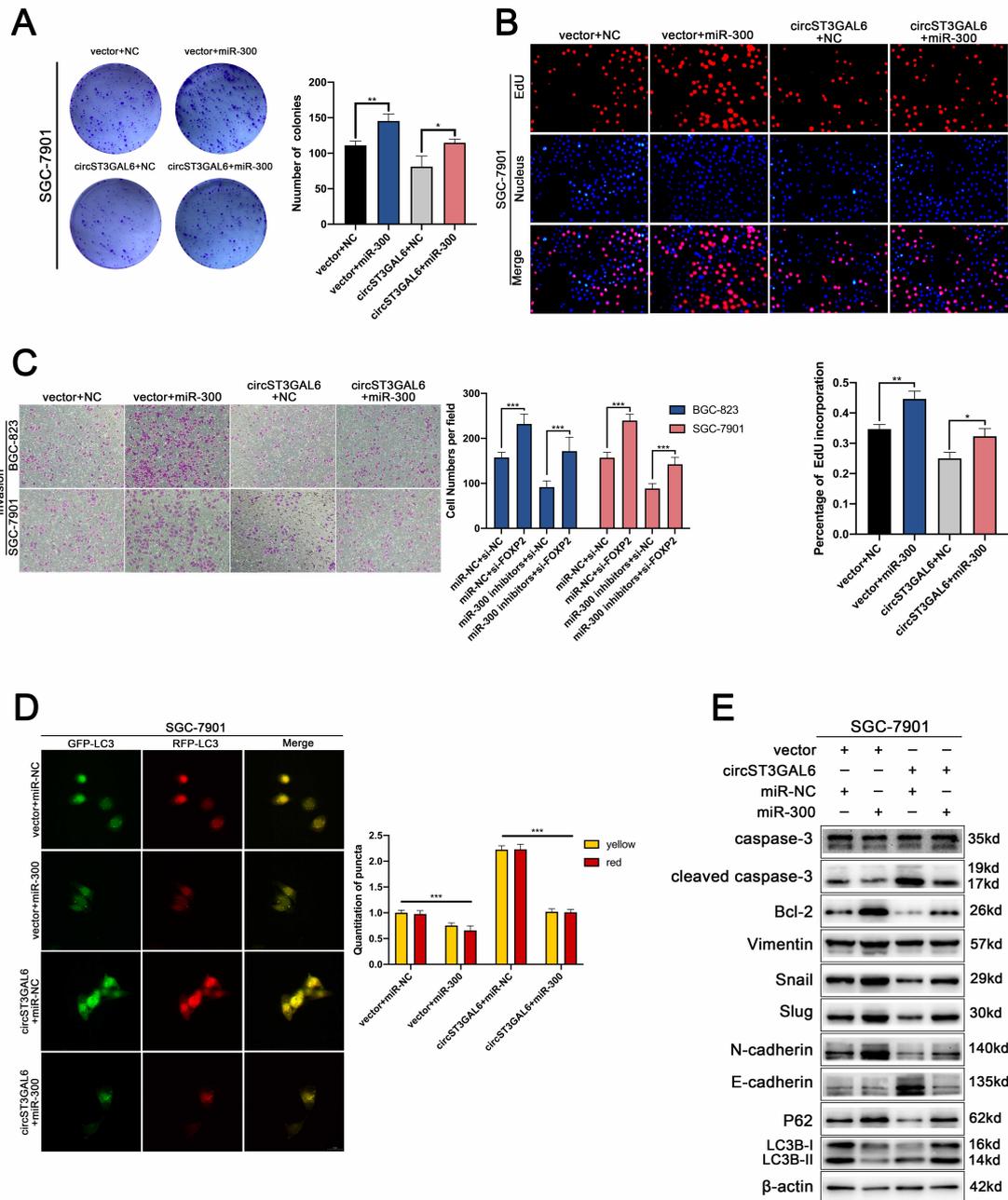
Assessment of cell invasion by transwell assay in BGC-823 and SGC-7901 cells. **e.**

GFP/mRFP-LC3 dots in SGC-823 cell were observed and counted by confocal microscopy.

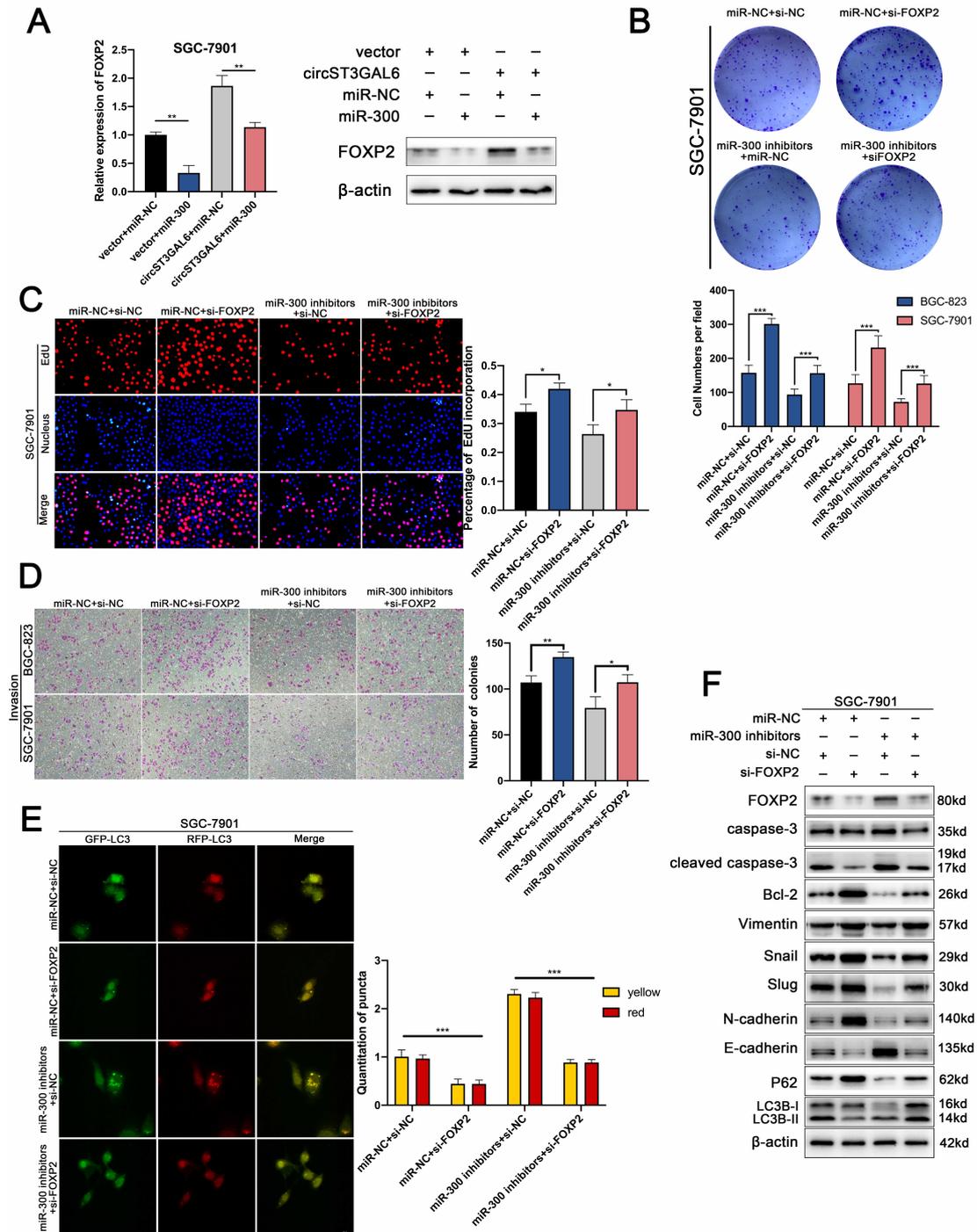
f. Detection of apoptosis, autophagy and EMT related proteins by western blotting in

SGC7901 cells. (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Data are expressed as the means \pm

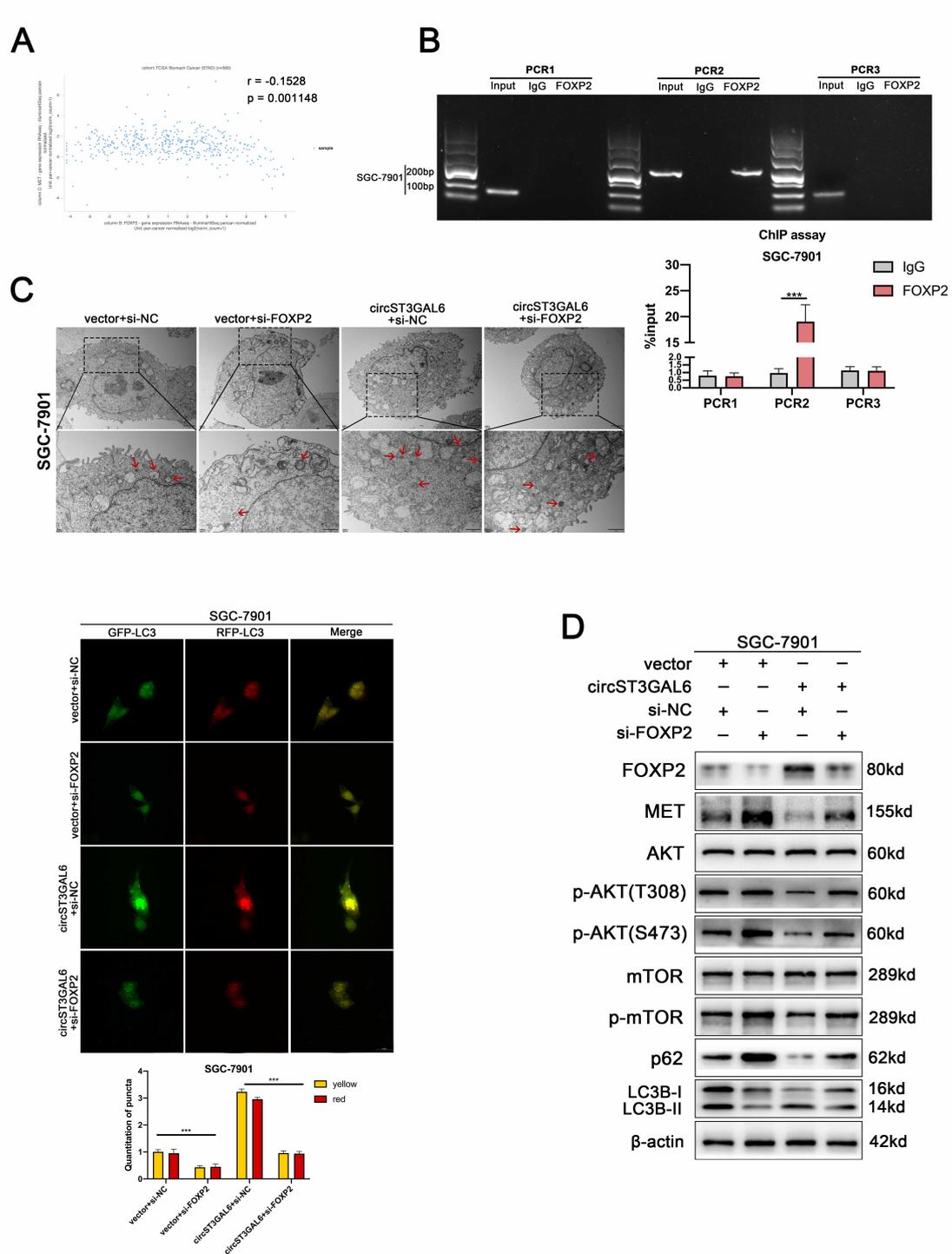
SDs)



823 and SGC-7901 cells. **d.** The effect of circST3GAL6 overexpression on autophagy can be recovered by miR-300 in SGC-7901 cell. **e.** Expression levels of apoptotic, EMT and autophagy proteins were examined by western blotting in SGC-7901 cell. (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Data are expressed as the means \pm SDs)

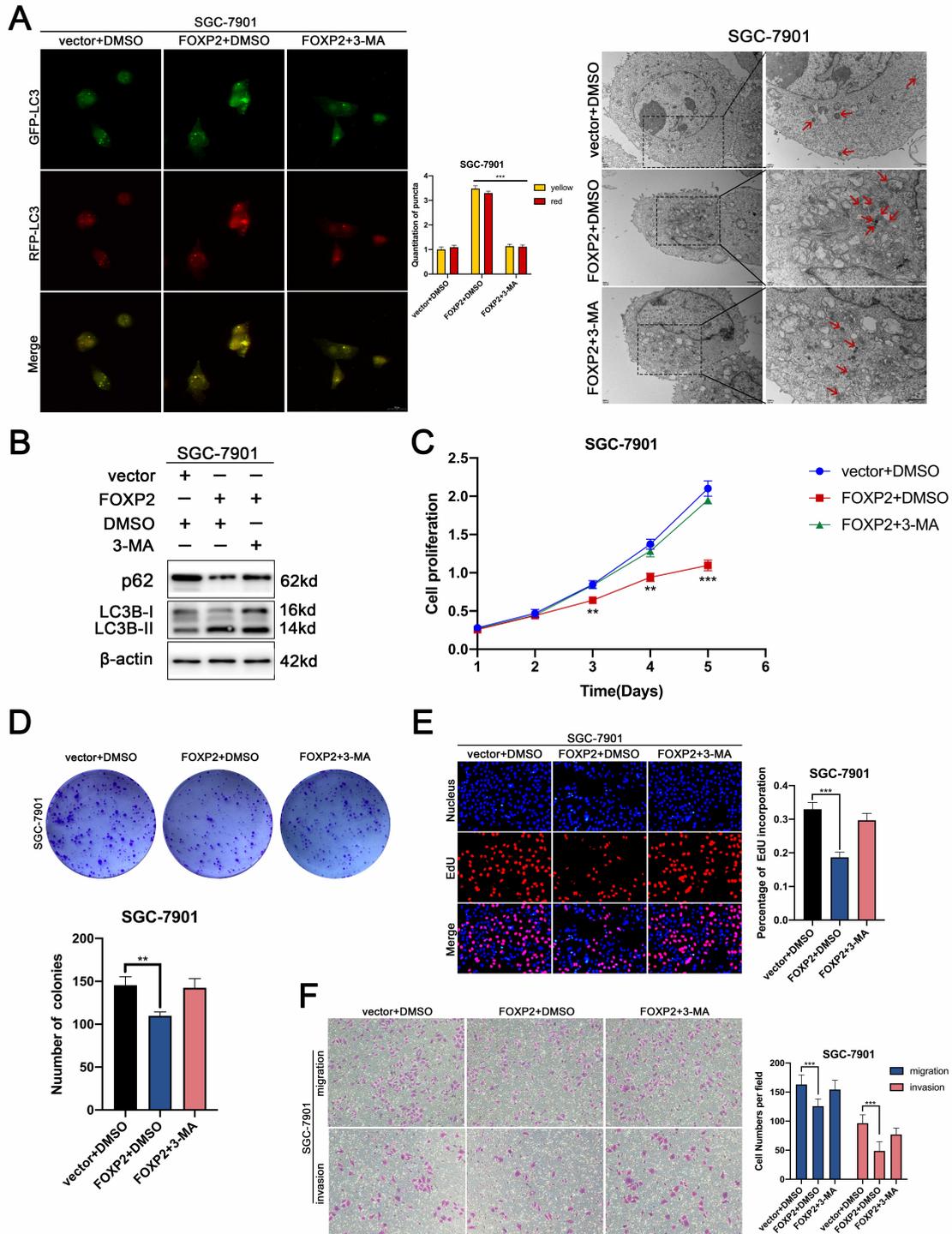


Supplementary FigureS3 Knockdown of FOXP2 reverses the effect of miR-300 inhibitors on GC cells. **a.** Overexpression of miR-300 could restore the effect of CircST3GAL6 on FOXP2 expression by qRT-PCR and western blotting in SGC-76901 cell. **b.** and **c.** Knockdown of FOXP2 could restore the effect of miR-300 inhibitors on cell proliferation in BGC-823 cell by colony formation and EDU assays. **d.** The inhibition of cell invasion by miR-300 inhibitors was restored by knockdown of FOXP2 in BGC-823 and SGC-7901 cells. **e.** The effect of miR-300 inhibitors on autophagy can be recovered by knockdown of FOXP2 in SGC-7901 cell. **f.** Expression levels of apoptotic, EMT and autophagy proteins were examined by western blotting in SGC-7901 cell. (*p < 0.05, **p < 0.01, ***p < 0.001. Data are expressed as the means ± SDs)



Supplementary FigureS4 FOXP2 transcriptionally inhibits MET and regulates autophagy through AKT/mTOR axis. **a.** The correlation between FOXP2 and MET was detected from TCGA database. **b.** qRT-PCR was performed in SGC-7901 cell after pulling down FOXP2 using three pairs of primers to investigate the potential FOXP2 binding sites in MET

promoter region. **c.** The effect of overexpression of circST3GAL6 on autophagy can be recovered by knockdown of FOXP2 via confocal microscopy and transmission electron microscopy in SGC-7901 cell. **d.** Expression levels of FOXP2, MET/AKT/mTOR and autophagy proteins were examined by western blotting. (*p < 0.05, **p < 0.01, ***p < 0.001. Data are expressed as the means ± SDs)



Supplementary FigureS5 FOXP2 regulates the malignant progression of GC cells through autophagy. **a.** The effect of overexpression of FOXP2 on autophagy can be recovered by 3-MA (5nM, 24 h) via confocal microscopy and transmission electron microscopy in SGC-7901 cell. **b.** Expression levels of autophagy-related proteins were

examined by western blotting in SGC-7901 cell. **c.-e.** 3-MA (5nM, 24 h) could restore the effect of FOXP2 overexpression on cell proliferation in SGC-7901 cell by CCK8, colony formation and EdU assays. **f.** 3-MA (5nM, 24 h) could restore the effect of FOXP2 overexpression on cell migration and invasion in SGC-7901 cell transwell assays. (*p < 0.05, **p < 0.01, ***p < 0.001. Data are expressed as the means ± SDs)

Supplementary Table 1

Primer sequence	
circST3GAL6	Forward: 5'-GGGATGAGAACATCAGCGGAAT-3' Reverse: 5'-GAGGAAGACAGCACTCAGGAA-3'
linear ST3GAL6	Forward: 5'-GAGTGCTGTCTTCCTCTAT-3' Reverse: 5'-GATCTTATTTCTCCGTTTC-3'
miR-300	Forward: 5'-ATACAAGGGCAGACTCTCTCT-3' Reverse: General downstream primer 5'-CAGTGCGTGTCTCGTGGAGT-3'
miR-370-5p	Forward: 5'-CAGGTCACGTCTCTGCAGTTAC-3' Reverse: General downstream primer'
miR-510-5p	Forward: 5'-TACTCAGGAGAGTGGCAATCAC-3' Reverse: General downstream primer'
miR-6758-5p	Forward: 5'-TAGAGAGGGGAAGGATGTGATGT-3' Reverse: General downstream primer'
miR-6832-5p	Forward: 5'-AGTAGAGAGGAAAAGTTAGGGTC-3' Reverse: General downstream primer'
miR-6859-5p	Forward: 5'-GAGAGGAACATGGGCTCAGGACA-3' Reverse: General downstream primer
miR-877-5p	Forward: 5'-GTAGAGGAGATGGCGCAGGG-3' Reverse: General downstream primer'
FOXP2	Forward: 5'-AATCTGCGACAGAGACAATAAGC-3' Reverse: 5'-TCCACTTGTTTGCTGCTGTAAA-3'
LMO3	Forward: 5'-GATGCACTTAGAGATCTGGG-3' Reverse: 5'-GATTATTCCTCTGCCTACGG-3'
NRXN1	Forward: 5'-TAAGTGGCCTCCTAATGACCG-3' Reverse: 5'-TCGCACCAATACGGCTTCTTT-3'
GFRA1	Forward: 5'-CCAAAGGGAACAACCTGCCTG-3' Reverse: 5'-CGGTTGCAGACATCGTTGGA-3'
KIAA0408	Forward: 5'-TCCTTTGGCTACAGACAACCA-3' Reverse: 5'-ACCTTCGCAAGTTCTTCAAGAG-3'

GRHL3	Forward: 5'-GGACCTCACTCCCCTTGAAAG-3' Reverse: 5'-CAGTGGTGGGTAACAGGTAGC-3'
SORBS1	Forward: 5'-CACAATCGAGAACAGCAAAAACG-3' Reverse: 5'-ACCCGCCTACTGTCATCCTTT-3'
PCSK2	Forward: 5'-GGGAAAGGTGTTACCATTGGAA-3' Reverse: 5'-CCAGTCATCTGTGTACCGAGG-3'
BNC1	Forward: 5'-ATCCCCGTTGCGCTAAAATC-3' Reverse: 5'-AGTGATCCAACACCTTTCTGA-3'
NRXN3	Forward: 5'-AGTGGTGGGCTTATCCTCTAC-3' Reverse: 5'-CCCTGTTCTATGTGAAGCTGGA-3'
β -actin	Forward: 5'-ATTGCCGACAGGATGCAGAA-3' Reverse: 5'-GCTGATCCACATCTGCTGGAA-3'
GAPDH	Forward: 5'-GAACGGGAAGCTCACTGG-3' Reverse: 5'-GCCTGCTTCACCACCTTCT-3'
U6	Forward: 5'-CTCGCTTCGGCAGACA-3' Reverse: General downstream primer
Met-CHIP-PCR1	Forward: 5'-TGCTCTACTTGTAGCTCCT-3' Reverse: 5'-CTCTCGTGTCTCATCTGTG-3'
Met-CHIP-PCR2	Forward: 5'-TACATTATCATTTCCAAAGT-3' Reverse: 5'-TTCCGGCTCTCATAACCAAC-3'
Met-CHIP-PCR3	Forward: 5'-TTCATCGCTATTTGCCAG-3' Reverse: 5'-AGGAGACTTCCATTTCTTT-3'
Transfection sequence	
si-circST3GAL6-1	sense: 5'-GACAAGUGAGCCAGCCAUGTT-3' antisense:5'-CAUGGCUGGCUCACUUGUCTT-3'
si-circST3GAL6-2	sense: 5'-GAUGAGUUUGACAAGUGAGTT-3' antisense:5'-CUCACUUGUCAAAACUCAUCTT-3'
miR-300 mimics	sense: 5'-UAUACAAGGGCAGACUCUCUCU-3' antisense:5'-AGAGAGUCUGCCCUUGUAUAUU-3'
miR-300 inhibitors	5'-AGAGAGAGUCUGCCCUUGUAUA-3'
si-FOXP2-1	sense: 5'-GCGACAGAGACAAUAAGCATT-3' antisense:5'-UGCUUUAUUGUCUCUGUCGCTT-3'
si-FOXP2-2	sense: 5'-GGACAGUCUUCAGUUCUAATT-3' antisense:5'-UUAGAACUGAAGACUGUCCTT-3'
Si-FOXP2-3	sense: 5'-CAUCUCCCAAACCUCUAAATT-3' antisense:5'-UUUAGAGGUUUGGAGAUGTT-3'
Fluorescent probe sequence	
circST3GAL6	5'-Cy3-CCCTCTCATGGCTGGCTCAC TTGTCAAACCTCATCAAAGAG-Cy3-3'
miR-300	5'-Fam-AGAGAGAGTCTGCCCTTGAT-Fam-3'

Luciferase reporter gene mutation sequence	
circST3GAL6(mut13-31)	5'-ACUCUCCCAUAGAACACCG -3'
circST3GAL6(mut217-240)	5'-AAUCUUUCUAACGAAGGAACAUAC -3'

Supplementary Table 2

Primary antibody		
Caspase3	Cell signaling Technology	#9662
Cleaved-caspase3	Cell signaling Technology	#9664
Bcl-2	Cell signaling Technology	#15071
Vimentin	Cell signaling Technology	#5741
Snail	Cell signaling Technology	#3879
Slug	Cell signaling Technology	#9585
N-cadherin	Cell signaling Technology	#13116
E-cadherin	Cell signaling Technology	#14472
P62	proteintech	18420-1-AP
LC3B	Cell signaling Technology	#3868
β -actin	Cell signaling Technology	#4970
FOXP2	Cell signaling Technology	#5337
FOXP2	abcam	Ab16046
MET	Cell signaling Technology	#8198
AKT	proteintech	10176-2-AP
Phospho-AKT(T308)	Cell signaling Technology	#4056
Phospho-AKT(S473)	proteintech	66444-1-Ig
mTOR	proteintech	66888-1-Ig
Phospho-mTOR	proteintech	67778-1-Ig
Secondary antibody		
Anti-rabbit IgG	Cell signaling Technology	#7074
Anti-mouse IgG	Cell signaling Technology	#7076
Reagent		
3-Methyladenine	MedChemExpress	5142-23-4