

Supplementary table 1

BCL2	R	CGGTTTCAGGTACTCAGTCATCC
	F	GGTGGGGTTCATGTGTGTGG
BECN1	R	GAATCTGCGAGAGACACCATC
	F	CCATGCAGGTGAGCTTCGT

Supplementary table 2. Primers for ChIP assay in *BECN1* promoter.

set1	F	5'-TGTTGGCCAGGCTGGTCTCG-3'
	R	5'-CTTCAGCGACTTCCCGGTAG-3'
set2	F	5'-CAGAGCGATGGTAGTTCTGG-3'
	R	5'-ATCCCAGCTACTCAGGAGGC-3'
set3	F	5'-ACTCCTGACCTCACGTGATC-3'
	R	5'-TACGACGGCAGCAGGAGCTC-3'
set4	F	5'-ACGTCCGGTCTCGGCGGAAG-3'
	R	5'-AAGTCCGGTCTACCGCGGAG-3'

Supplementary table 3. Oligonucleotides for pull down assay.

1	F	5'-biotin-CACCGCGCCCGCCGCCCCCTG-3'
	R	5'-biotin-CAGGGGGCGGCGGGGCGCGGTG-3'
2	F	5'-biotin-AGCCCGGCCTCTGGGGGCCGCTGCCGGGCCT-3'
	R	5'-biotin-AGGCCCCGCAGCGGCCCCAGAGGCCGGGC-3'
3	F	5'-biotin-TCGCTCCGGGGCCGACCCGA-3'
	R	5'-biotin-TCGGGTCGGCCCCGGAGCGA-3'
4	F	5'-biotin-AGTGCCTCCGCGGTAGACCGGA-3'
	R	5'-biotin-TCCGGTCTACCGCGGAGGCACT-3'

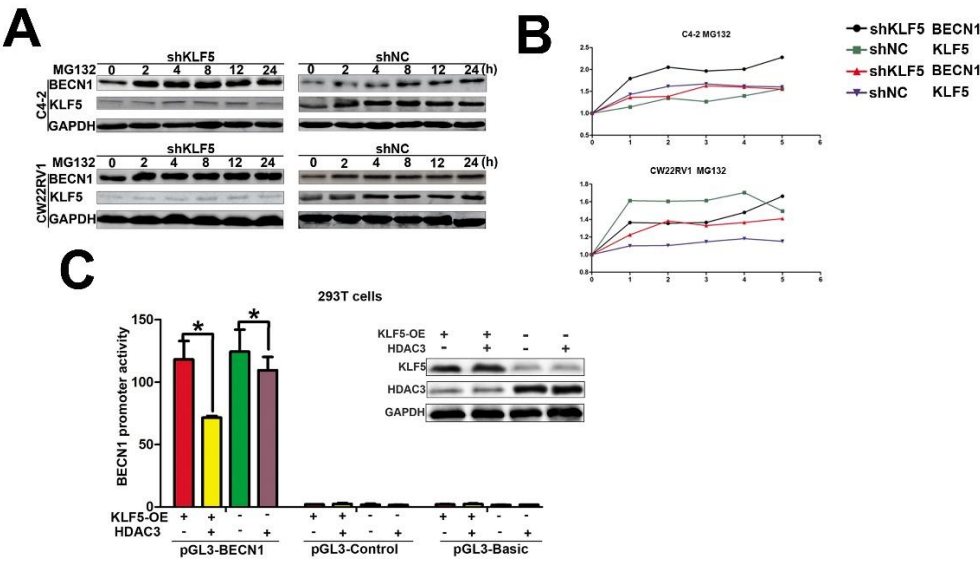


Figure S1. KLF5 upregulated BECN1 level not via affecting BECN1 protein stability and KLF5 cooperated with HDAC3 to repress *BECN1* promoter activity.

(A) Cells transfected with shKLF5 or a scrambled RNA and treated with MG132 for different times. Protein levels of BECN1 and KLF5 were detected by western blotting analysis. (B) Cells transfected with shKLF5 or a scrambled RNA and treated with MG132 for different times. Protein level of BECN1 and KLF5 were detected by western blotting analysis, and qualified and showed in curves. (C) Overexpressed HDAC3 inhibited *BECN1* promoter activity, and overexpressed both KLF5 and HDAC3 could further inhibit *BECN1* promoter activity as detected by dual-fluorescence assay in 293T cells.

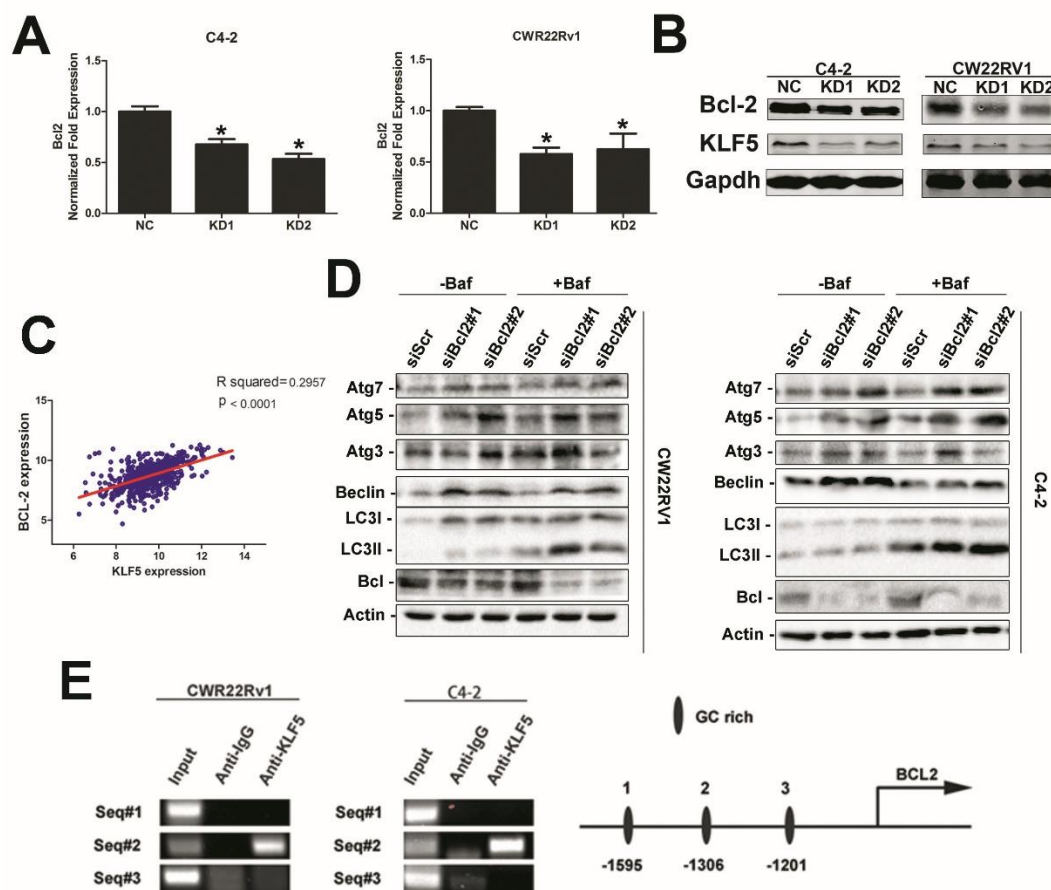


Figure S2. KLF5 upregulated Bcl2 through promoting its transcription.

(A and B) KLF5 knockdown by shRNA in cells and Bcl2 expression was detected by RT-qPCR and western blotting analysis. (C) Pearson's correlation analysis of KLF5 mRNA level and Bcl2 mRNA level in prostate cancer patients from TCGA database. (D) Cells transfected with siBcl2 or a scrambled RNA with or without Bafilomycin (10 μ M). Autophagic markers LC-3I/II, BECN1, ATG3, ATG7 and ATG5 were detected by western blotting analysis. (E) Chromatin immunoprecipitation of KLF5 on the *Bcl2* gene promoter in C4-2 and CWR22RV1 cells. Right: Representation of *Bcl2* promoter region as mapped by ChIP assay.

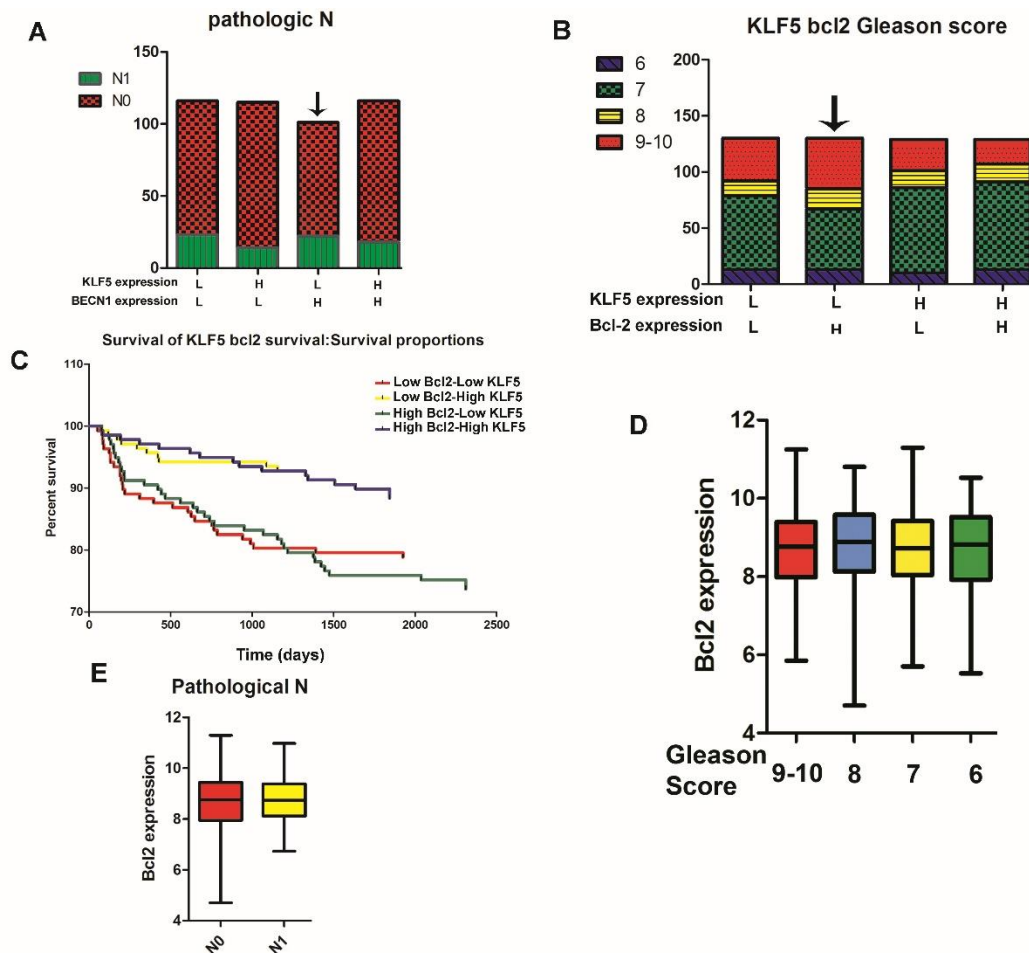


Figure S3. Bcl-2 expression was not associated with prostate cancer progression and prognosis of patients.

(A) Percentage of pathologic N1 in prostate cancer patients with low KLF5/low BECN1 expression (n=116), high KLF5/low BECN1 expression (n=115), low KLF5/high BECN1 expression (n=101) and high KLF5/high BECN1 expression (n=116). Data from TCGA database. (B) Percentage of various Gleason Score in prostate cancer patients with low KLF5/low Bcl2 expression (n=137), high KLF5/low Bcl2 expression (n=138), low KLF5/high Bcl2 expression (n=137) and high KLF5/high Bcl2 expression (n=138). Data from TCGA database. (C) Kaplan-Meier analysis of the first biochemical recurrence of prostate cancer patients with low KLF5/low Bcl2 expression (n=137), high KLF5/low Bcl2 expression (n=137), low KLF5/high Bcl2 expression (n=136) and high KLF5/high Bcl2 expression (n=137). *p*-value is depicted. Data from TCGA database. (D) Relative expression of Bcl2 in patients with different Gleason Scores. Gleason Score 6: n=49; Gleason Score 7: n=277; Gleason Score 8: n=63; Gleason Score 9-10: n=132. Data from TCGA database. (E) Relative expression of Bcl2 in patients with different Pathological N. N0: n=371, N1: n=71.

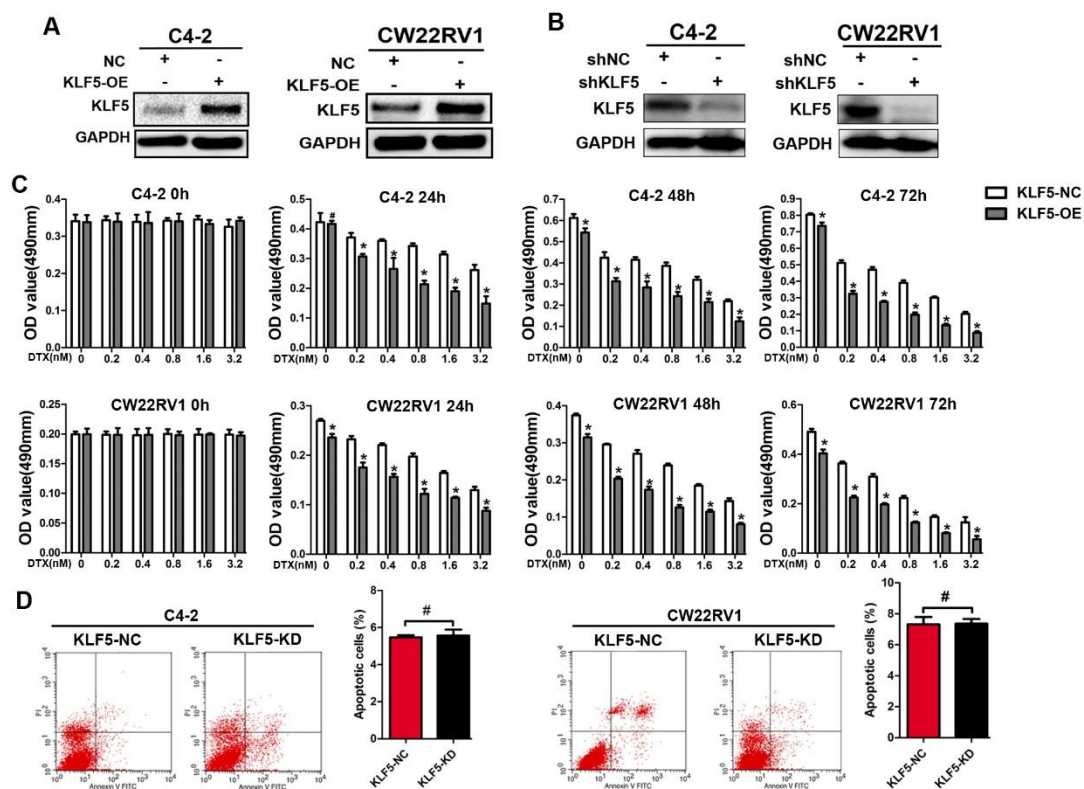


Figure S4. **(A, B)** Validation of KLF5 overexpression (A) or KLF5 knockdown (B) in C4-2 and CW22RV1 cells for the following assays. **(C)** Cells transfected with pcDNA3-KLF5 or empty vector for 48h and then treated with docetaxel of various concentration for different time. Cell viability was assessed by MTT assay. **(D)** Cell apoptosis was detected by FACS in KLF5 knockdown (KLF5-KD) and control cells. # $p > 0.05$.