

Supplementary Table s1. Clinical characteristics of patients with prostate cancer in 2 cohorts

Cohorts	N	Sample types		Clinical characteristics																			
		Tumor	Normal	Age		pT stage			pN stage		cM stage		AJCC stage				PSA value		Gleason score			BCR stage	
				< 60	≥60	2	3	4	N0	N1	M0	M1	I	II	III	IV	< 4	≥4	< 7	7	> 7	No	Yes
TCGA	497	497	53	202	295	187	293	10	345	79	455	3	53	128	235	81	413	27	45	247	205	404	93
DKFZ	118			118	0	74	35	7									4	112	13	87	18	81	24

Abbreviations: N, numbers of patients; pT stage, pathological tumor stage; pN, pathological nodes stage; cM stage, clinical metastasis stage; AJCC, American Joint Commission on Cancer; PSA, prostate specific antigen; BCR, biochemical recurrence.

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点数	80	例数 80
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组织阵列类型	石蜡包埋	种属 人类
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Applications	Routine histology procedures including Immunohistochemistry (IHC) and In Situ Hybridization (ISH), protocols which can be found at our support page.	
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Pro-Prostate
Legend: AT (*) ● Hyperplasia (*) ● Malignant (*) ● Malignant (I) ● Malignant (II) ● Malignant (III) ● Malignant (IV)

TISSUE ARRAYS MPR803	A	1	2	3	4	5	6	7	8	9	10	MPR803 (C10) Age: 82 Sex: M Organ (Anatomic Site): Prostate Pathology diagnosis: Adenocarcinoma 4(4+4) Grade: * TNM: T2aN0M0 Stage: II Tissue ID: Mpr200100 Type: Malignant
	B	●	●	●	●	●	●	●	●	●	●	
	C	●	●	●	●	●	●	●	●	●	●	
	D	●	●	●	●	●	●	●	●	●	●	
	E	●	●	●	●	●	●	●	●	●	●	
	F	●	●	●	●	●	●	●	●	●	●	
	G	●	●	●	●	●	●	●	●	●	●	
	H	●	●	●	●	●	●	●	●	●	●	

Pos	No	Age	Sex	Organ_Anatomic_Site	Pathology_diagnosis	Grade	TNM	Stage	Type	isBackUp
A1	1	70	M	Prostate	Adenocarcinoma 1(3+2)	*	T3N0M0	III	Malignant	N
A2	2	79	M	Prostate	Adenocarcinoma 1(3+3)	*	*	*	Malignant	N
A3	3	73	M	Prostate	Adenocarcinoma 2(3+4)	*	*	*	Malignant	N
A4	4	68	M	Prostate	Adenocarcinoma 1(3+3) (sparse)	*	T3N0M0	III	Malignant	N
A5	5	67	M	Prostate	Adenocarcinoma 2(3+4)	*	T2aN0M0	II	Malignant	N
A6	6	56	M	Prostate	Adenocarcinoma 2(3+4)	*	*	*	Malignant	N
A7	7	70	M	Prostate	Adenocarcinoma 2(3+4)	*	*	*	Malignant	N
A8	8	65	M	Prostate	Adenocarcinoma 2(3+4)	*	*	*	Malignant	N
A9	9	64	M	Prostate	Adenocarcinoma 2(3+4)	*	*	*	Malignant	N
A10	10	84	M	Prostate	Adenocarcinoma 2(3+4)	*	*	*	Malignant	N
B1	11	72	M	Prostate	Adenocarcinoma 2(3+4)	*	*	*	Malignant	N
B2	12	68	M	Prostate	Adenocarcinoma 2(3+4)	*	*	*	Malignant	N
B3	13	73	M	Prostate	Adenocarcinoma 3(4+3)	*	T1N0M0	I	Malignant	N
B4	14	64	M	Prostate	Adenocarcinoma 2(3+4)	*	*	*	Malignant	N
B5	15	71	M	Prostate	Adenocarcinoma 2(3+4)	*	T3N0M0	III	Malignant	N
B6	16	75	M	Prostate	Adenocarcinoma 2(3+4)	*	T2N0M0	II	Malignant	N
B7	17	57	M	Prostate	Adenocarcinoma 2(3+4)	*	T2N0M0	II	Malignant	N
B8	18	71	M	Prostate	Adenocarcinoma 2(3+4)	*	T2N0M0	II	Malignant	N
B9	19	66	M	Prostate	Adenocarcinoma 2(3+4)	*	T2aN0M0	II	Malignant	N
B10	20	64	M	Prostate	Adenocarcinoma 2(3+4)	*	T2N0M0	II	Malignant	N
C1	21	60	M	Prostate	Adenocarcinoma 2(3+4)	*	T2N0M0	II	Malignant	N
C2	22	72	M	Prostate	Adenocarcinoma 3(4+3) (interstitial)	*	T2N0M0	II	Malignant	N
C3	23	62	M	Prostate	Adenocarcinoma 3(4+3)	*	T3N1M0	IV	Malignant	N
C4	24	64	M	Prostate	Adenocarcinoma 3(4+3)	*	*	*	Malignant	N
C5	25	73	M	Prostate	Adenocarcinoma 3(4+3)	*	*	*	Malignant	N
C6	26	75	M	Prostate	Adenocarcinoma 3(4+3)	*	T3N0M0	III	Malignant	N
C7	27	65	M	Prostate	Adenocarcinoma 3(4+3)	*	T2aN0M0	I	Malignant	N
C8	28	69	M	Prostate	Adenocarcinoma 2(3+4)	*	T3N0M0	III	Malignant	N
C9	29	78	M	Prostate	Adenocarcinoma 4(4+4)	*	T2N0M0	II	Malignant	N
C10	30	82	M	Prostate	Adenocarcinoma 4(4+4)	*	T2aN0M0	II	Malignant	N
D1	31	71	M	Prostate	Adenocarcinoma 4(4+4)	*	*	*	Malignant	N
D2	32	72	M	Prostate	Adenocarcinoma 4(4+4)	*	*	*	Malignant	N
D3	33	91	M	Prostate	Adenocarcinoma 4(4+4) (sparse)	*	*	*	Malignant	N
D4	34	62	M	Prostate	Adenocarcinoma 3(4+3)	*	*	*	Malignant	N
D5	35	70	M	Prostate	Adenocarcinoma 4(4+4)	*	*	*	Malignant	N
D6	36	62	M	Prostate	Adenocarcinoma 4(4+4)	*	T2N0M0	II	Malignant	N
D7	37	20	M	Prostate	Adenocarcinoma 4(4+4)	*	T2aN0M0	II	Malignant	N
D8	38	66	M	Prostate	Adenocarcinoma 4(4+4)	*	*	*	Malignant	N
D9	39	61	M	Prostate	Adenocarcinoma 4(4+4)	*	T3N0M0	III	Malignant	N
D10	40	62	M	Prostate	Adenocarcinoma 4(4+4)	*	T2N0M0	I	Malignant	N
E1	41	69	M	Prostate	Adenocarcinoma 4(4+4)	*	T3N1M0	IV	Malignant	N
E2	42	72	M	Prostate	Adenocarcinoma 4(4+4)	*	T2N0M0	II	Malignant	N
E3	43	69	M	Prostate	Adenocarcinoma 4(5+3) (interstitial)	*	T3N0M0	III	Malignant	N
E4	44	75	M	Prostate	Adenocarcinoma 4(5+3)	*	*	*	Malignant	N
E5	45	71	M	Prostate	Adenocarcinoma 4(5+3)	*	*	*	Malignant	N
E6	46	64	M	Prostate	Adenocarcinoma 5(4+5)	*	T2N0M0	II	Malignant	N
E7	47	72	M	Prostate	Adenocarcinoma 5(4+5) (interstitial)	*	T3N0M0	III	Malignant	N
E8	48	78	M	Prostate	Adenocarcinoma 5(4+5)	*	*	*	Malignant	N
E9	49	79	M	Prostate	Adenocarcinoma 5(4+5)	*	*	*	Malignant	N
E10	50	72	M	Prostate	Adenocarcinoma 5(4+5)	*	*	*	Malignant	N
F1	51	81	M	Prostate	Adenocarcinoma 5(4+5)	*	*	*	Malignant	N
F2	52	75	M	Prostate	Adenocarcinoma 5(4+5)	*	*	*	Malignant	N
F3	53	76	M	Prostate	Adenocarcinoma 5(4+5)	*	*	*	Malignant	N
F4	54	87	M	Prostate	Adenocarcinoma 5(4+5)	*	T2N0M0	II	Malignant	N
F5	55	74	M	Prostate	Adenocarcinoma 5(4+5)	*	T2N0M0	II	Malignant	N
F6	56	72	M	Prostate	Adenocarcinoma 5(4+5)	*	T2N0M0	II	Malignant	N
F7	57	70	M	Prostate	Adenocarcinoma 5(4+5)	*	T3N0M0	III	Malignant	N
F8	58	66	M	Prostate	Adenocarcinoma 5(4+5)	*	T3aN0M0	III	Malignant	N
F9	59	81	M	Prostate	Adenocarcinoma 5(4+5)	*	T3aN0M0	III	Malignant	N
F10	60	68	M	Prostate	Adenocarcinoma 5(5+4)	*	*	*	Malignant	N

Tissue Marker

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	A	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	
	B	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	
	C	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	
	D	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	
	E	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	
	F	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	
	G	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	
H	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO	PRO		

Pos	No	Age	Sex	Organ_Anatomic_Site	Pathology_diagnosis	Grade	TNM	Stage	Type	isBackUp
G1	61	84	M	Prostate	Hyperplasia	*	*	*	Hyperplasia	N
G2	62	63	M	Prostate	Hyperplasia	*	*	*	Hyperplasia	N
G3	63	65	M	Prostate	Hyperplasia	*	*	*	Hyperplasia	N
G4	64	78	M	Prostate	Hyperplasia	*	*	*	Hyperplasia	N
G5	65	70	M	Prostate	Hyperplasia	*	*	*	Hyperplasia	N
G6	66	70	M	Prostate	Hyperplasia	*	*	*	Hyperplasia	N
G7	67	68	M	Prostate	Hyperplasia	*	*	*	Hyperplasia	N
G8	68	64	M	Prostate	Hyperplasia	*	*	*	Hyperplasia	N
G9	69	48	M	Prostate	Hyperplasia	*	*	*	Hyperplasia	N
G10	70	80	M	Prostate	Hyperplasia	*	*	*	Hyperplasia	N
H1	71	67	M	Prostate	Cancer adjacent prostate tissue	*	*	*	AT	N
H2	72	91	M	Prostate	Cancer adjacent prostate tissue	*	*	*	AT	N
H3	73	60	M	Prostate	Cancer adjacent prostate tissue	*	*	*	AT	N
H4	74	67	M	Prostate	Cancer adjacent prostate tissue	*	*	*	AT	N
H5	75	64	M	Prostate	Cancer adjacent prostate tissue	*	*	*	AT	N
H6	76	82	M	Prostate	Cancer adjacent prostate tissue	*	*	*	AT	N
H7	77	66	M	Prostate	Cancer adjacent prostate tissue	*	*	*	AT	N
H8	78	64	M	Prostate	Cancer adjacent prostate tissue	*	*	*	AT	N
H9	79	66	M	Prostate	Cancer adjacent prostate tissue	*	*	*	AT	N
H10	80	68	M	Prostate	Cancer adjacent prostate tissue	*	*	*	AT	N

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A

Gene	Drug	Corr	P value
Risk score	AZD5438	0.435	7.59e-27
	MK.1775	-0.154	2.81e-4
	Ribociclib	0.195	3.89e-6
	RO.3306	0.329	2.33e-15
	Wee1.Inhibitor	-0.340	2.46e-16
ACOX2	AZD5438	-0.451	6.07e-29
	MK.1775	0.154	2.83e-4
	Ribociclib	-0.398	2.28e-22
	RO.3306	-0.390	2.17e-21
	Wee1.Inhibitor	0.400	1.99e-22

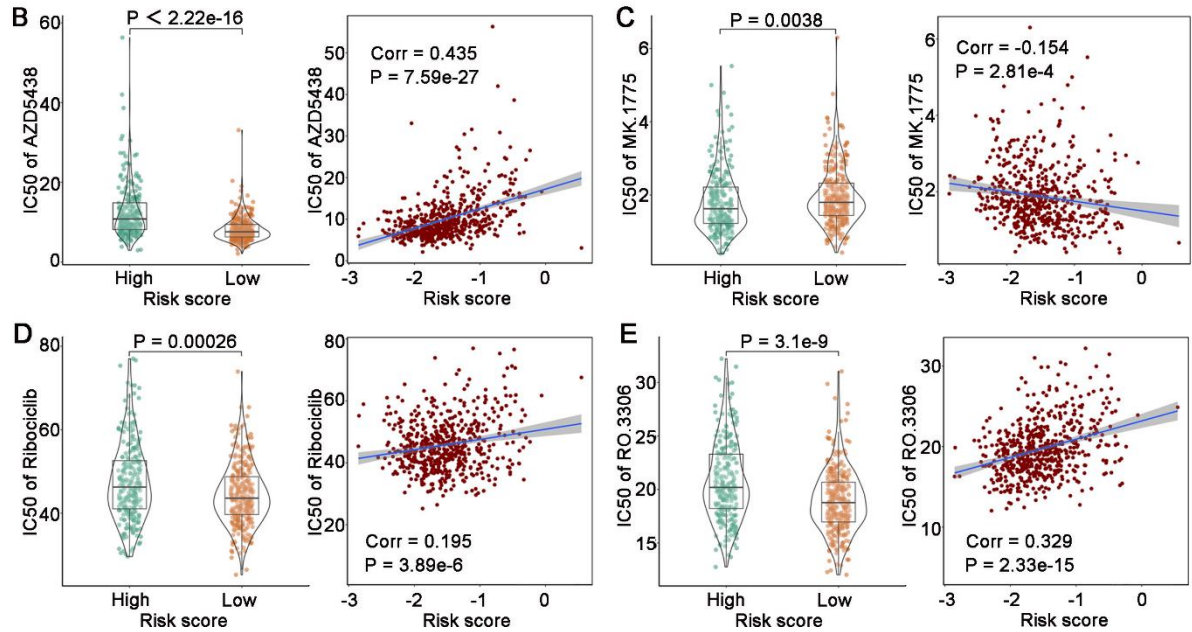


Figure S1. Drugs/compounds associated with risk scores and ACOX2. (A) Wee1.

Inhibitor, AZD5438, MK.1775, Ribociclib and RO.3306 were correlated with risk scores and ACOX2. (B-E) The IC50 and corresponding correlations of AZD5438, MK.1775, Ribociclib, and RO.3306 with risk score, respectively.

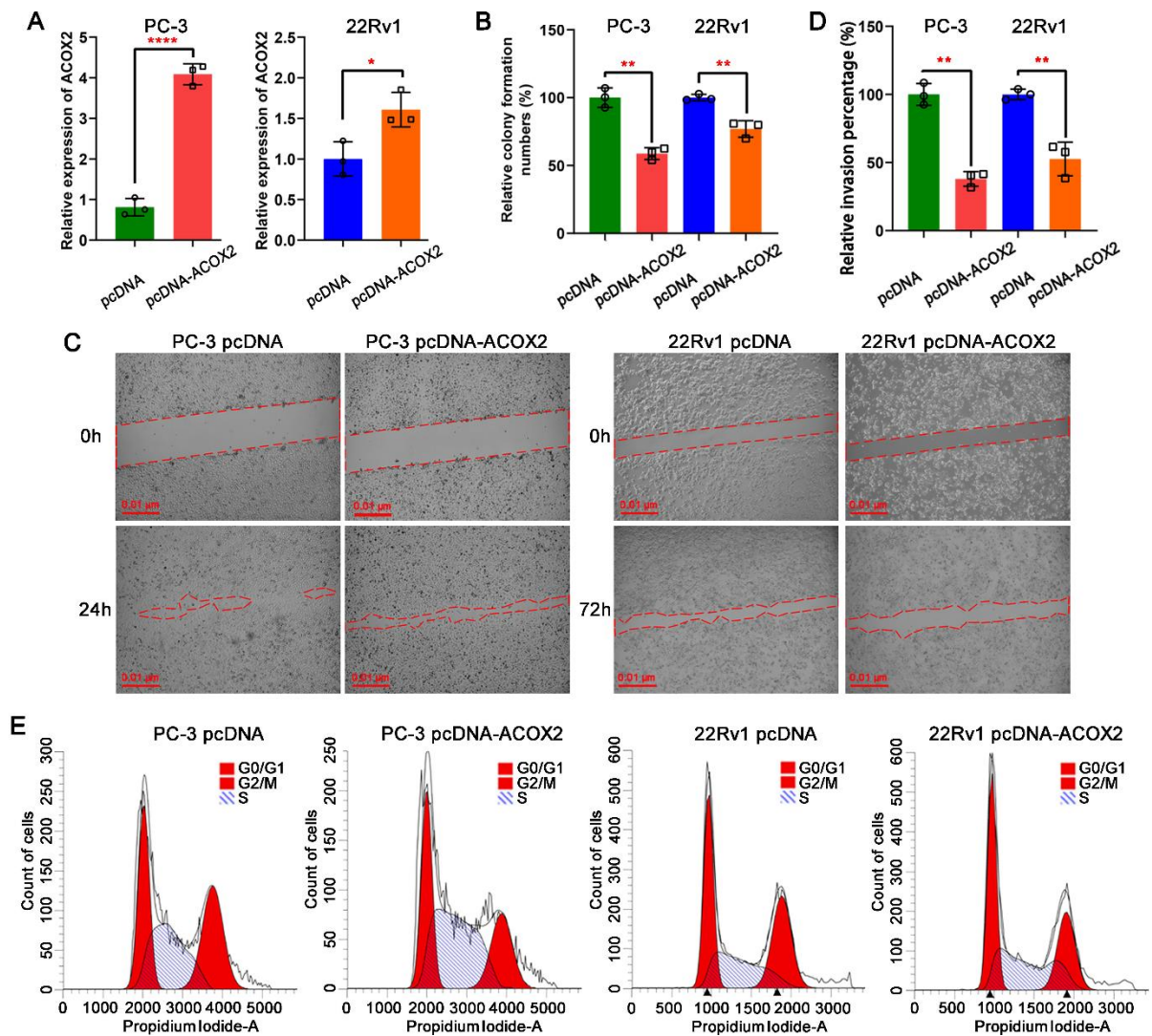


Figure s2. Measuring the biological function of ACOX2 in PCa cell lines. (A) The expression of ACOX2 in ACOX2-overexpressing PC-3 and 22Rv1 cell lines. (B) Quantification of the colony numbers of PCa cell lines. (C) The migration ability of PCa cell lines was detected through a wound healing assay. (D) Quantification of the invasion percentage of PCa cell lines. (E) Distribution of cell cycle phases of PCa cell lines was measured by a cell cycle assay. Data are expressed as the mean \pm SD. * $P < 0.05$, ** $P < 0.01$, **** $P < 0.0001$, ^{ns} $P > 0.05$. $n = 3$ independent experiments.