SUPPLEMENTARY TABLES

Supplementary Table 1. The original data of surviving fraction of AsPC-1 cells.

Dose	Carbon ions		si14-3-3σ + Carbon ions	
	Mean	SD	Mean	SD
0 Gy	1.000	0.120	1.000	0.134
1 Gy	0.546	0.068	0.363	0.086
2 Gy	0.170	0.031	0.072	0.019
3 Gy	0.028	0.003	0.010	0.004

Abbreviation: SD, Standard Deviation.

Supplementary Table 2. The original data of surviving fraction of MiaPaCa-2 cells.

Dose	Carbon ions		14-3-3σ + Carbon ions	
	Mean	SD	Mean	SD
0 Gy	1.000	0.053	1.000	0.065
1 Gy	0.201	0.027	0.350	0.035
2 Gy	0.039	0.007	0.100	0.016
3 Gy	0.008	0.001	0.021	0.004

Abbreviation: SD, Standard Deviation.

Supplementary Table 3. Sequence information used in this study.

ID	Sequences or target sequence (5'→3')
14-3-3σ si 1	GUCCAGUAUUGAGCAGAAATTUUUCUGCUCAAUACUGGACTT
14-3-3σ si 2	GGGUCUUCUACCUGAAGAUTTAUCUUCAGGUAGAAGACCCTT
14-3-3σ si 3	CCAUGGACACAUCAGCAAGAATTUUCUUGCUGAUGUCCAUGGTT
Negative control siRNA	UUCUCCGAACGUGUCACGUTTACGUGACACGUUCGGAGAATT
14-3-3σ shRNA	ACGACAAGAAGCGCATCATTG
Lentivirus NC	TTCTCCGAACGTGTCACGT
14-3-3σ OE sequence	ATGGAGAGAGCCAGTCTGATCCAGAAGGCCAAGCTGGCAGAGCAGGCC GAACGCTATGAGGACATGGCAGCCTTCATGAAAGGCGCCGTGGAGAAG GGCGAGGAGCTCTCCTGCGAAGAGCGAAACCTGCTCTCAGTAGCCTATA AGAACGTGGTGGGCGGCCAGAGGGCTGCCTGGAGGGTGCTGTCCAGTA TTGAGCAGAAAAGCAACGAGGAGGGCTCGGAGGAGAAGGGGCCCGAG GTGCGTGAGTACCGGGAGAAGGTGGAGACTGAGCTCCAGGGCGTGTGC GACACCGTGCTGGGCCTGCTGGACAGCCACCTCATCAAGGAGGCCGGG GACGCCGAGAGCCGGGTCTTCTACCTGAAGATGAAGGGTGACTACTAC CGCTACCTGGCCGAGGTGGCCACCGGTGACGACAAGAAGCGCATCATT GACTCAGCCCGGTCAGCCTACCAGGAGGCCATGGACATCAGCAAGAAG GAGATGCCGCCCACCAACCCCATCCGCCTGGGCCTGGCCCTGAACTTTT CCGTCTTCCACTACGAGATCGCCAACAGCCCCGAGGAGGCCATCTCTCT GGCCAAGACCACTTTCGACGAGGCCATGGCTGATCTGCACACCCTCAGC GAGGACTCCTACAAAGACAGCACCCTCATCATGCAGCTGCTGCGAGAC AACCTGACACTGTGGACGGCCGACAACGCCGGGGAAGAGGGGGGCGA GGCTCCCCAGGAGCCCCAGAGCTGA

Supplementary Table 4. Antibodies used in this study.

Antibodies	Application	Company	Catalog numbers
14-3-3σ	1:5000 for WB	Proteintech	66251-1-Ig
p-CHK1	1:2000 for WB	Immunoway	YP0063
CHK1	1:2000 for WB	Immunoway	YT0902
RPA2	1:2000 for WB	Immunoway	YT4170
RPA2	1:200 for IHC	Immunoway	YT4170
RPA2	1:2000 for IF	Proteintech	67999-1-Ig
p-RPA2	1:2000 for WB	Immunoway	YP0476
p-CHK2	1:2000 for WB	Immunoway	YP0065
CHK2	1:2000 for WB	Immunoway	YT0908
p-ATM	1:2000 for WB	Immunoway	YP1206
ATM	1:2000 for WB	Immunoway	YT0397
p-ATR	1:2000 for WB	Immunoway	YP1269
ATR	1:2000 for WB	Immunoway	YT0416
γ H2AX	1:2000 for WB	Cell Signaling Technology	9718
γ H2AX	1:200 for IF	Cell Signaling Technology	9718
γ H2AX	1:200 for IHC	Cell Signaling Technology	9718
RAD51	1:3000 for WB	GeneTex	GTX100469
RAD51	1:200 for IF	GeneTex	GTX100469
53BP1	1:3000 for WB	GeneTex	GTX102595
53BP1	1:200 for IF	GeneTex	GTX102595
Ki67	1:400 for IHC	Proteintech	28074-1-AP
β-Actin	1:2000 for WB	Proteintech	66009-1-Ig

Supplementary Table 5. Primer sequences used for amplification

Gene	Sequences or target sequence (5'→3')
14-3-3σ Fp	GGATCCCACTCTTCTTGCAG
14-3-3σ Rp	CTGTCCAGTTCTCAGCCACA
β-actin Fp	CGGAACCGCTCATTGCC
β-actin Rp	ACCCACACTGTGCCCATCTA
ATM Fp	TGCACTTCCGTCAGCAAAGA
ATM Rp	GCGCTTACACATCTCTTCCAC
ATR Fp	CGTGATCAGCGAGAGCCTTT
ATR Rp	ACATGGGTCTTGGCCTTTTCA