Supplementary Materials: Carbon Nanodots for On Demand Chemo-photothermal Therapy Combination to Elicit Necroptosis: Overcoming Apoptosis Resistance in Breast Cancer Cell Lines

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Table S1. and oligonucleotide primers used in this study.

Gene name	Gene symbol	Accession Number	Primer sequence (5' – 3')
Apoptotic peptidase activating factor 1	*APAF1*	NM_001160	GCCAAGCAGGAGGTCGATAATG GACCATCCTCAGAAAAGCAGGC
ATG12 autophagy related 12 homolog	*ATG12*	NM_004707	GGGAAGGACTTACGGATGTCTC AGGAGTGTCTCCCACAGCCTTT
ATG3 autophagy related 3 homolog	*ATG3*	NM_022488	ACTGATGCTGGCGGTGAAGATG GTGCTCAACTGTTAAAGGCTGCC
ATG5 autophagy related 5 homolog	*ATG5*	NM_004849	GCAGATGGACAGTTGCACACAC GAGGTGTTTCCAACATTGGCTCA
ATG7 autophagy related 7 homolog	*ATG7*	NM_006395	CGTTGCCCACAGCATCATCTTC CACTGAGGTTCACCATCCTTGG
BCL2-associated X protein	*BAX*	NM_004324	TCAGGATGCGTCCACCAAGAAG TGTGTCCACGGCGGCAATCATC
B-cell CLL/lymphoma 2	*BCL2*	NM_000633	ATCGCCCTGTGGATGACTGAGT GCCAGGAGAAATCAAACAGAGGC
BCL2-related protein A1	*BCL2A1 (BFL1)*	NM_004049	GGATAAGGCAAAACGGAGGCTG CAGTATTGCTTCAGGAGAGATAGC
BCL2-like 1	*BCL2L1 (BCLXL)*	NM_138578	GCCACTTACCTGAATGACCACC AACCAGCGGTTGAAGCGTTCCT
BCL2-like 11 (apoptosis facilitator)	*BCL2L11*	NM_006538	CAAGAGTTGCGGCGTATTGGAG ACACCAGGCGGACAATGTAACG
Beclin 1, autophagy related	*BECN1*	NM_003766	CTGGACACTCAGCTCAACGTCA CTCTAGTGCCAGCTCCTTTAGC
Bcl2 modifying factor	*BMF*	NM_033503	CAGTGGCAACATCAAGCAGAGG GCAAGGTTGTGCAGGAAGAGGA
Caspase 2, apoptosis-related cysteine peptidase	*CASP2*	NM_032982	TGCCTTCTGTGAAGCACTGAGG CGGAAAAGGGAGACTCAAGTCG
Caspase 3, apoptosis-related cysteine peptidase	*CASP3*	NM_004346	GGAAGCGAATCAATGGACTCTGG GCATCGACATCTGTACCAGACC
Caspase 7, apoptosis-related cysteine peptidase	*CASP7*	NM_001227	CGGAACAGACAAAGATGCCGAG AGGCGGCATTTGTATGGTCCTC
Caspase 9, apoptosis-related cysteine peptidase	*CASP9*	NM_001229	GTTTGAGGACCTTCGACCAGCT CAACGTACCAGGAGCCACTCTT
COMM domain containing 4	*COMMD4*	NM_017828	CAGTGCTGAGTTTCATCCTCTCC TGCTTCTCCTCATAACAGCGGC
Cylindromatosis (turban tumor syndrome)	*CYLD*	NM_015247	GGTAATCCGTTGGATCGGTCAG AGTGCCTCTGAAGGTTCCATCC
Eukaryotic translation initiation factor 5B	*EIF5B*	NM_015904	AACGGAGGATTGAGAAACGGCG TTCCCTGTGTCCACATGCCCAA
Fas (TNF receptor superfamily, member 6)	*FAS(TNFR SF6)*	NM_000043	GGACCCAGAATACCAAGTGCAG GTTGCTGGTGAGTGTGCATTCC
UDP-N-acetyl-alpha-D-galactosamine:polypeptide	*GALNT5*	NM_014568	CCAGTGGATAGAGCCATTGAAGA TCTCAGGAGAGTGGACCACACT

	Gene	Accession	Primer sequences (5'→3')
N-acetylgalactosaminyltransferase 5 (GalNAc-T5)			
Microtubule-associated protein 1 light chain 3 alpha	*MAP1LC3 A*	NM_181509	GCTACAAGGGTGAGAAGCAGCT CTGGTTCACCAGCAGGAAGAAG
Myeloid cell leukemia sequence 1 (BCL2-related)	*MCL1*	NM_021960	CCAAGAAAGCTGCATCGAACCAT CAGCACATTCCTGATGCCACCT
Poly (ADP-ribose) polymerase 1	*PARP1(AD PRT1)*	NM_001618	CCAAGCCAGTTCAGGACCTCAT GGATCTGCCTTTTGCTCAGCTTC
Poly (ADP-ribose) polymerase 2	*PARP2*	NM_005484	GGTGGCTTGTTCAGGCAATCTC GGTGGCATAGTCCATCTGTAGC
Phosphoinositide-3-kinase, class 3	*PIK3C3(VP S34)*	NM_002647	GCGTTCTTTGCTGGCTGCACAA CTCCAAGCAATGCCTGTAGTCTC
RAB25, member RAS oncogene family	*RAB25*	NM_020387	ACTGCTCTTCCTGGAGACCTCA GCTGTTCTGTCTCTGCTTGGAC
Transmembrane protein 57	*TMEM57*	NM_018202	CTGAGCAGGAAGCCCGAAGTTT CGATTCCGTAAGGTTTCGGTGC
Tumor necrosis factor	*TNFα*	NM_000594	CTCTTCTGCCTGCTGCACTTTG ATGGGCTACAGGCTTGTCACTC
Human receptor (TNFRSF)-interacting serine-threonine kinase 1	*RIPK1*	NM_003804	TATCCCAGTGCCTGAGACCAAC GTAGGCTCCAATCTGAATGCCAG
(Myc-DDK-tagged)-Human solute carrier family 25	*SLC25A4*	NM_001151	GCTGCCTACTTCGGAGTCTATG TGCGACTGCCGTCACACTCTG
beta Actin	*ACTB*	NM_001101	CACCATTGGCAATGAGCGGTTC AGGTCTTTGCGGATGTCCACGT
glyceraldehyde-3-phosphate dehydrogenase	*GAPDH*	NM_002046	GTCTCCTCTGACTTCAACAGCG ACCACCCTGTTGCTGTAGCCAA
18S ribosomal RNA	*18S*	M10098.1	CGGCTACCACATCCAAGGAA CTGGAATTACCGCGGCT

Table S2. Statistical analyses by t Student's of RT-qPCR analyses in MDA-MB-231 cell line, *p* values less than 0.05 are indicated by * and considered statistically significant.

			ESR NIR_{50}		ESR NIR_{200}		LSR NIR_{50}		LSR NIR_{200}	
	CDs-PEG-BT	CDs-PEG-BT/IT	CDs-PEG-BT	CDs-PEG-BT/IT	CDs-PEG-BT	CDs-PEG-BT/IT	CDs-PEG-BT	CDs-PEG-BT/IT	CDs-PEG-BT	CDs-PEG-BT/IT
APAF1				*	*			*		
ATG12		*	*	*	*	*	*	*	*	*
ATG3				*	*		*			
ATG5		*	*		*		*	*		*
ATG7		*	*	*		*	*	*		*
BAX				*		*				*
BCL2		*	*	*	*	*	*	*	*	*
BCL2A1		*	*	*	*	*	*			*
BCL2L1		*					*		*	*
BCL2L11	*	*	*	*	*	*	*	*	*	*
BECN1	*		*	*	*	*	*	*	*	*
BMF		*		*		*		*		*
CASP2							*		*	*

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Gene								
CASP3	*		*	*	*	*	*	*
CASP7	*		*		*	*	*	*
CASP9			*		*			
COMMD4	*						*	
CYLD	*		*	*	*			*
EIF5B	*			*			*	*
FAS			*		*			
GALNT5 *	*	*	*	*	*	*	*	*
MAP1LC3A	*		*		*	*		*
MCL1	*	*	*	*	*	*	*	*
PARP1							*	*
PARP2					*		*	
PIK3C3	*			*		*		
RAB25							*	
TMEM57	*	*	*	*	*	*	*	*
TNFα	*		*		*	*		*
RIPK1		*	*	*	*	*	*	*
SLC25A4					*		*	

Table S3. Statistical analyses by t Student's of RT-qPCR analyses in MCF7 cell line, p values less than 0.05 are indicated by * and considered statistically significant.

	ESR NIR$_{50}$		ESR NIR$_{200}$		LSR NIR$_{50}$		LSR *NIR$_{200}$*	
	CDs-PEG-BT	CDs-PEG-BT/IT	CDs-PEG-BT	CDs-PEG-BT/IT	CDs-PEG-BT	CDs-PEG-BT/IT	CDs-PEG-BT	CDs-PEG-BT/IT
APAF1	*	*		*	*		*	*
ATG12			*	*				
ATG3		*		*	*	*		*
ATG5	*	*		*	*	*		*
ATG7	*	*		*	*	*		*
BAX	*		*	*	*	*		*
BCL2	*	*	*	*	*		*	*
BCL2A1	*		*	*	*	*		
BCL2L1			*		*			
BCL2L11		*		*	*	*	*	*
BECN1	*	*	*	*	*	*	*	*
BMF								
CASP2		*		*	*		*	*
CASP3	*	*	*	*		*		*
CASP7	*	*	*	*	*	*	*	*
CASP9	*		*	*		*	*	*
COMMD4			*					
CYLD	*	*	*	*		*	*	*
EIF5B	*	*		*	*	*	*	*
FAS	*		*		*		*	
GALNT5	*	*	*	*	*	*	*	*

Gene													
MAP1LC3A				*		*	*			*			*
MCL1		*		*		*	*		*	*			*
PARP1	*	*		*		*	*			*			*
PARP2		*			*		*	*			*		*
PIK3C3	*	*	*	*			*		*	*		*	*
RAB25		*		*		*				*			*
TMEM57		*		*		*				*			*
TNFα	*	*	*	*		*	*		*	*		*	*
RIPK1	*	*		*		*	*			*		*	*
SLC25A4	*	*	*	*					*	*		*	*