

Supplementary Figure 1. Melatonin suppresses migration of thyroid cancer cells. (A) Thyroid cancer cells were incubated with indicated physiological concentrations of melatonin for 48h, and cell viability was measured by MTS assay. (B) Migration assays of BCPAP cells after treated with melatonin at indicated concentrations for 24h. Representative images (left panel) and quantification (right upper panel) were shown. (C) Wound closure assays of BCPAP cells after treated with melatonin at 1mM for 24h. Representative images and quantification were shown.

Supplementary Figure 2. Melatonin induces apoptosis of BCPAP cells. (A) BCPAP cells were treated with melatonin at the indicated concentrations and cell apoptosis was analyzed by flow cytometry. (B) Relative caspase3/7 activity of BCPAP cells after treated with melatonin at the indicated concentrations.

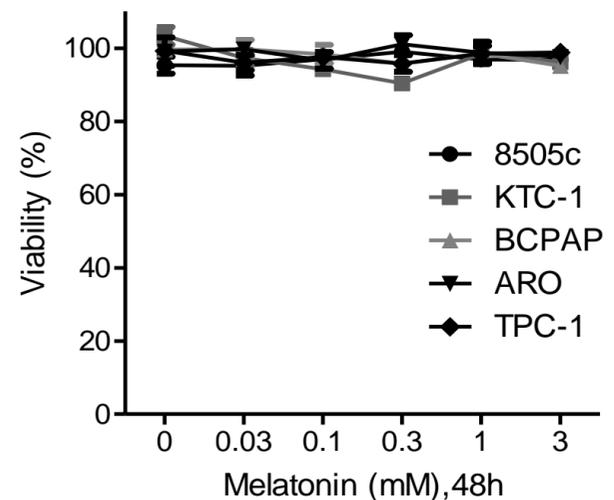
Supplementary Figure 3. NF- κ B/p65 mediates anti-migration activity of melatonin in thyroid tumor. (A) Immunoblotting of NF- κ B/p65 and p-NF- κ B/p65 in KTC-1 cells treated with or without TNF α (10ng/mL) and melatonin (2mM) for 24h. β -Actin was used as a loading control. (B) Western blot analysis of NF- κ B/p65 in 8505c and TPC-1 cells after transfection with specific siRNA. (C) Migration assays of 8505c and TPC-1 cells transfected with NF- κ B/p65 siRNA treated with melatonin.

Supplementary Figure 4. Melatonin synergizes with irradiation in thyroid tumor. (A) Combination index between melatonin and irradiation was calculated with CalcuSyn Biosoft in 8505c and TPC-1 cells. (B) Representative images and quantification of migration analysis in BCPAP cells. (C) Activity of caspase 3/7 in 8505c and TPC-1 cells after treated with melatonin and irradiation. (D) Immunoblotting of cleaved PARP and cleaved caspase 9 in KTC-1 cells after treated with melatonin, irradiation or both. β -Actin was used as a loading control.

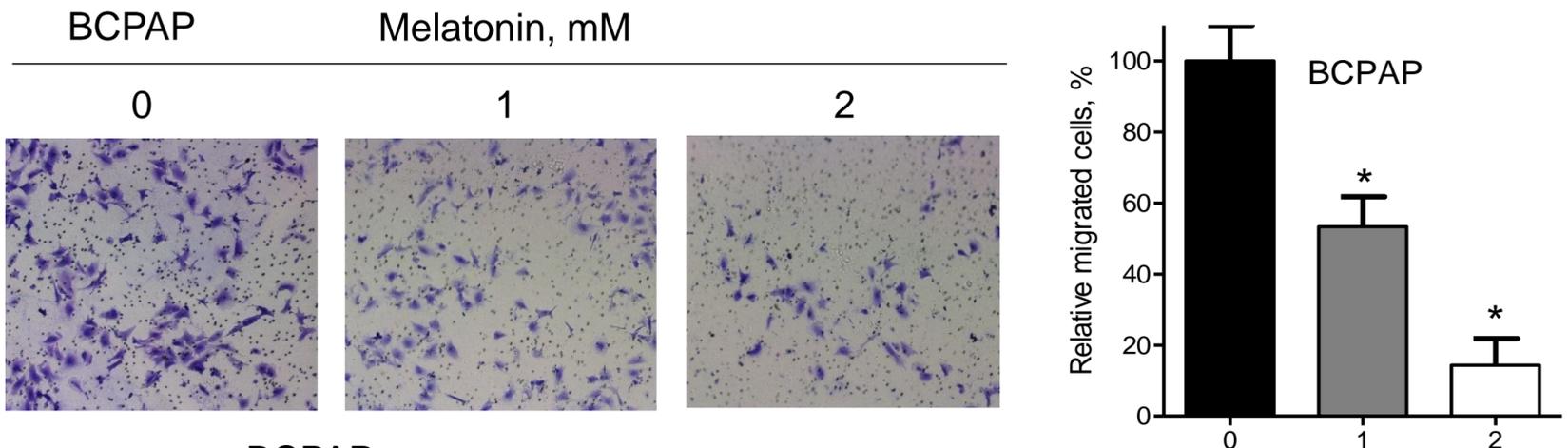
Supplementary Figure 5. Melatonin shows minimal side effects on the mice. Mice weight of subcutaneous model formed by 8505c (A) and TPC-1 (B) cells was recorded.

Supplementary Figure 1

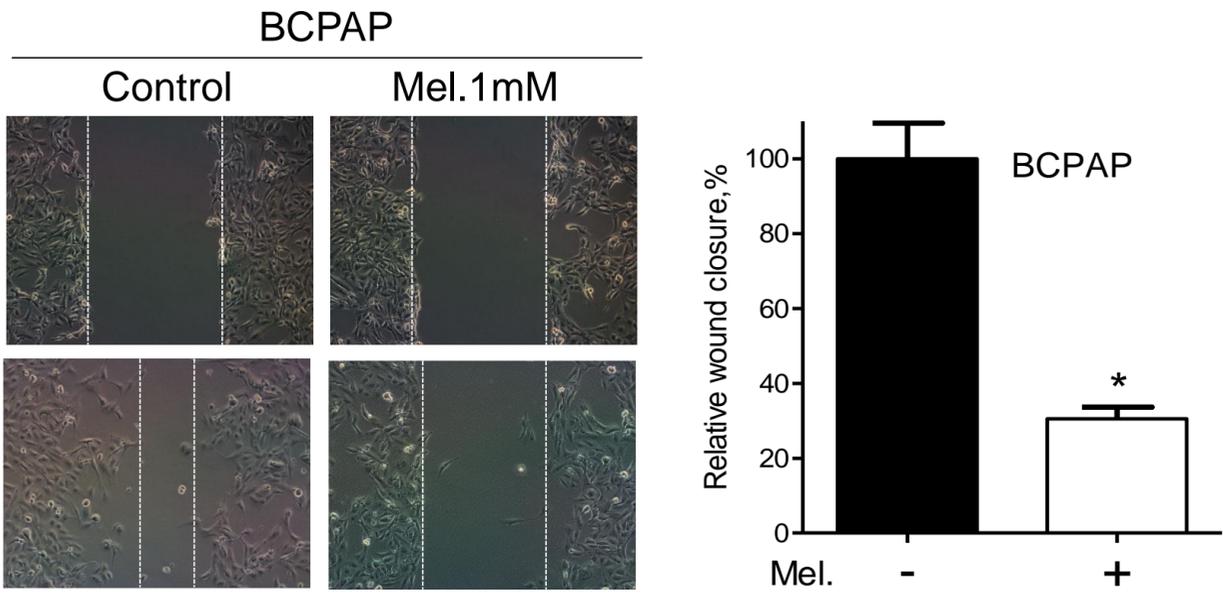
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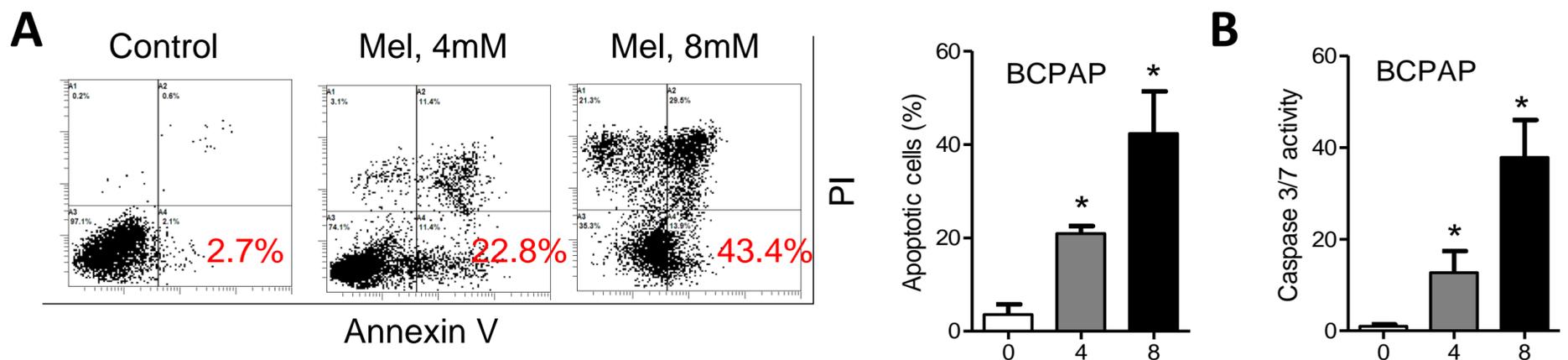
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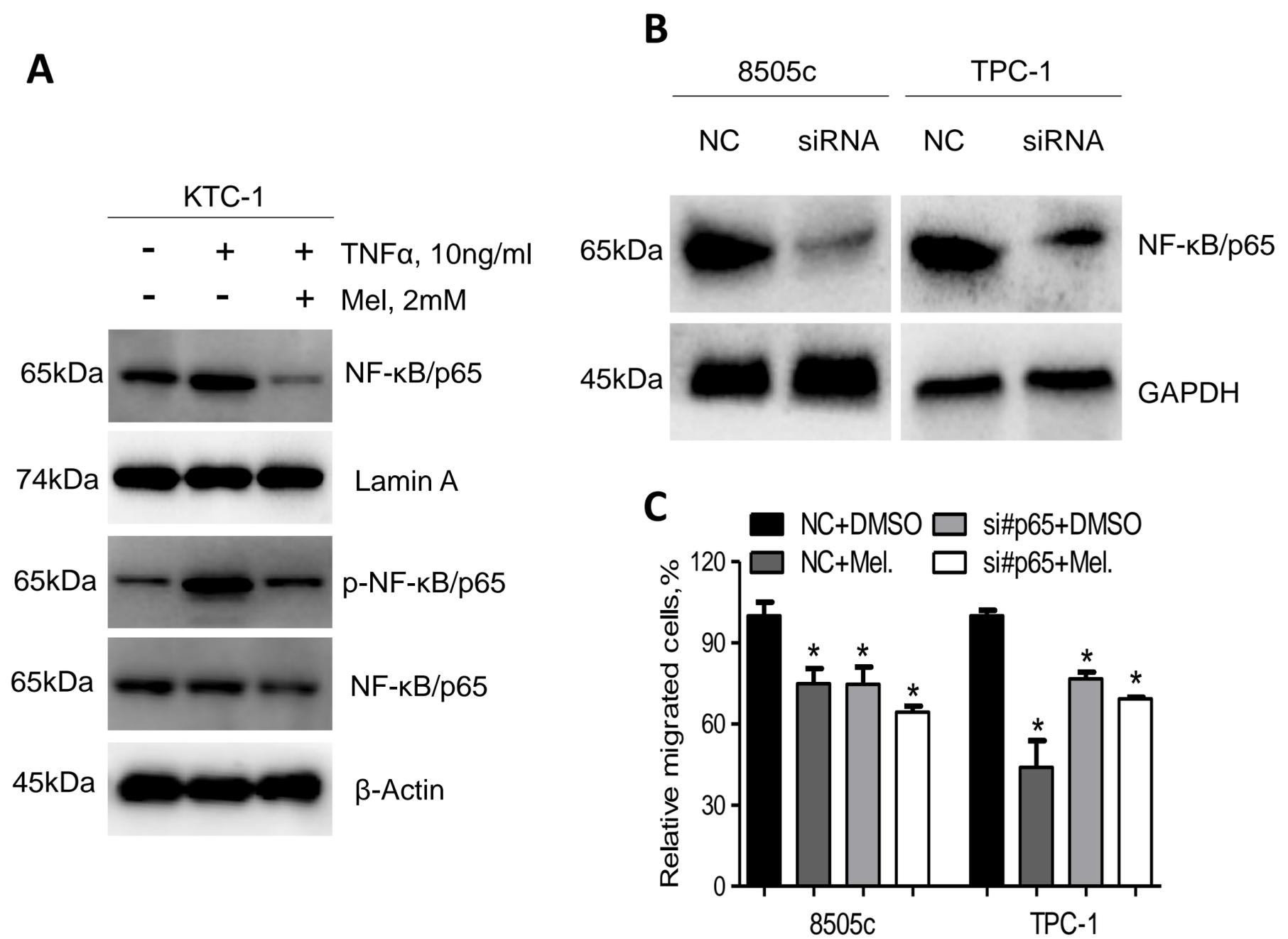
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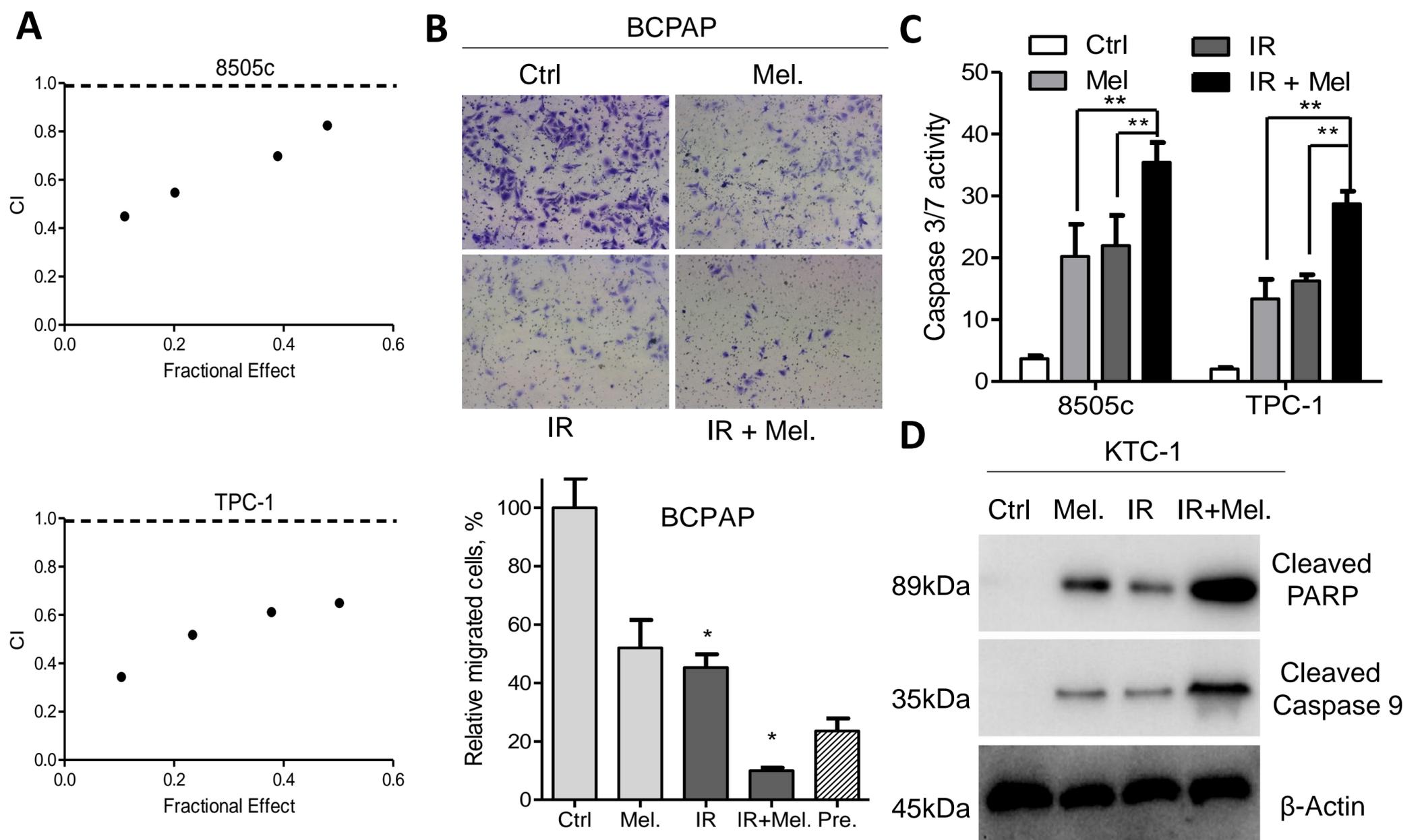
Supplementary Figure 2



Supplementary Figure 3



Supplementary Figure 4



Supplementary Figure 5

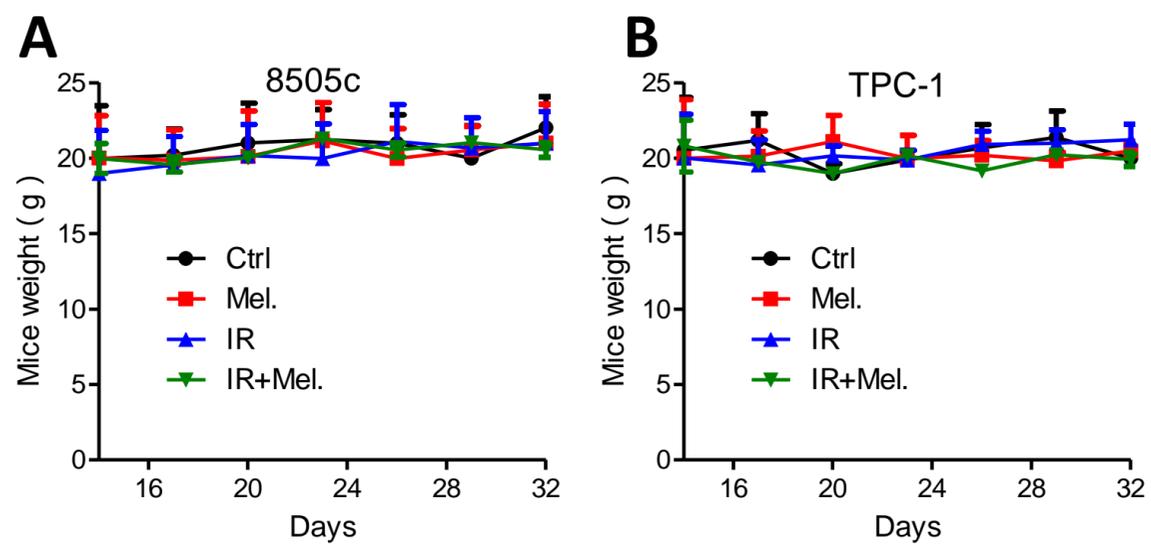


Table S1: Primer sequences for qPCR

Gene	Sequence (5'-3')
Cycin D1-F	TCCTCTCCAAAATGCCAGAG
Cycin D1-R	GGCGGATTGGAAATGAACTT
Bcl-xl-F	TTCAGTGACCTGACATCCCA
Bcl-xl-R	CTGCTGCATTGTTCCCATAG
IL-1 α -F	TGGTAGTAGCAACCAACGGGA
IL-1 α -R	ACTTTGATTGAGGGCGTCATTC
MMP9-F	TGTACCGCTATGGTTACACTCG
MMP9-R	GGCAGGGACAGTTGCTTCT
CXCR4-F	ACTACACCGAGGAAATGGGCT
CXCR4-R	CCCACAATGCCAGTTAAGAAGA
TWIST1-F	GTCCGCGTCCCCTACTAGC
TWIST1-R	TCCATTTTCTCCTTCTCTGGAA
GAPDH-F	ATCACCATCTTCCAGGAGCGA
GAPDH-R	CCTTCTCCATGGTGGTGAAGAC