Supplementary Data*:*

Senolytic-mediated elimination of head and neck tumor cells induced into senescence by cisplatin

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Figure S1

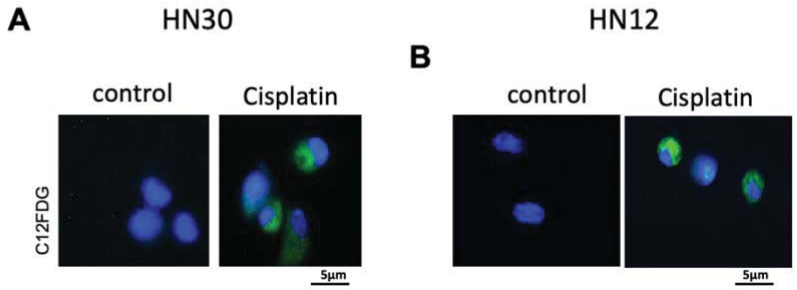

Figure S1. Immunofluorescence imaging of C_{12}FDG in **A)** HN30 and **B)** HN12 cells after senescence induction by 5 µM cisplatin. Blue fluorescence indicates nuclear staining with DAPI, and green fluorescence reflects C12FDG immunostaining.

Figure S2

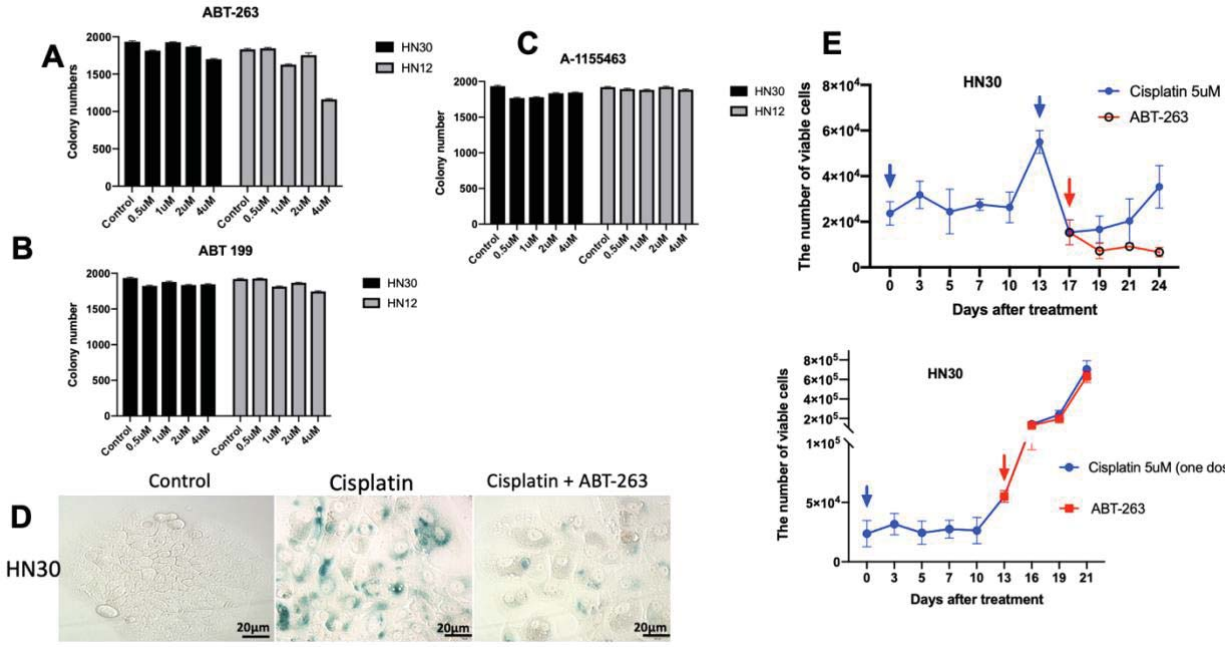

Figure S2. ABT-263 has minimal cytotoxicity on non-senescent cells or proliferative recovering cells from senescence. A, B, and C) Clonogenic survival assay performed on control cells treated with different concentrations of ABT-263 for 24 hours. The number of colonies were counted and analyzed. **D)** X-gal staining after sequential treatment of HN30 cells with cisplatin and ABT-263; decreased population of SA-β-gal positive cells show that ABT-263 treatment eliminates senescent cells**. E)** ABT-263 effectiveness diminishes over time when HN30 cells recover their proliferative capacity. Blue arrows indicate the cisplatin treatment timepoint. Red arrows are ABT-263 treatment timepoints. Note that HN30 cells undergo cell death only when they are in senescence state (top), but not in recovery stage (bottom). All quantitative graphs are mean ± SD from at least three independent experiments.

Figure S3

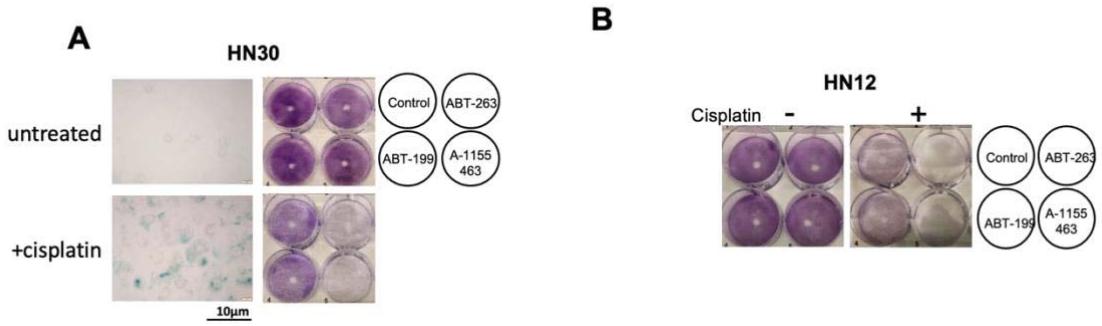

Figure S3. BCL-X_L is the primary target for ABT-263-induced senolysis. Clonogenic survival assay performed on **A)** HN30 **and B)** HN12 cells treated with vehicle or cisplatin followed by ABT-263, ABT-199, and A-1155463 (1uM for 24 hours).

Figure S4

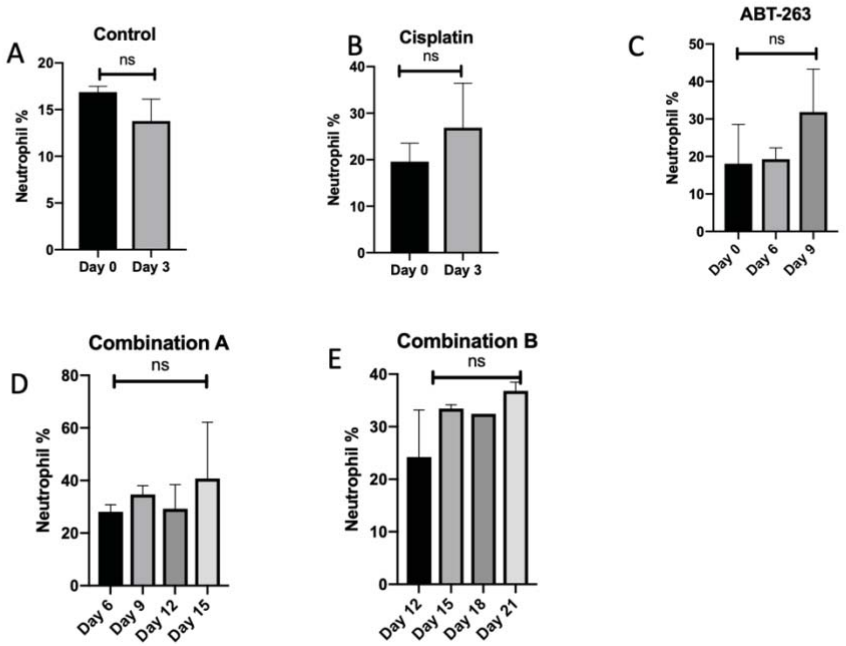

Figure S4. Cisplatin, ABT-263 treatment alone or in combination did not result in significant Neutropenia. Blood samples were analyzed for neutrophil percentage at different time points in different groups of **A)** control, **B)** Cisplatin alone, **C)** ABT-263, **D** and **E)** cisplatin in combination with ABT-263. Control vs ABT, cisplatin, Combination A or B: $p > 0.05$ All quantitative graphs are mean ± SD from at least three independent experiments. * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$, **** $p \leq 0.0001$ 0001 indicate statistical significance of each condition compared to indicated condition as determined using two ‑ way ANOVA with Sidak's post hoc test.

Figure S5

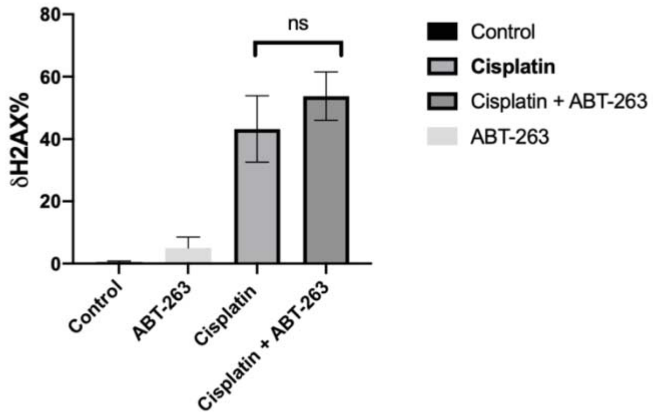

Figure S5. Cisplatin, ABT-263 treatment alone or in combination did not result in significant levels of DNA double strand breaks measured by γ-H2AX levels. $p > 0.05$ All quantitative graphs are mean ± SD from at least three independent experiments. * $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$, **** $p \leq 0.0001$ 0001 indicate statistical significance of each condition compared to indicated condition as determined using two‐way ANOVA with Sidak's post hoc test.

Figure S6

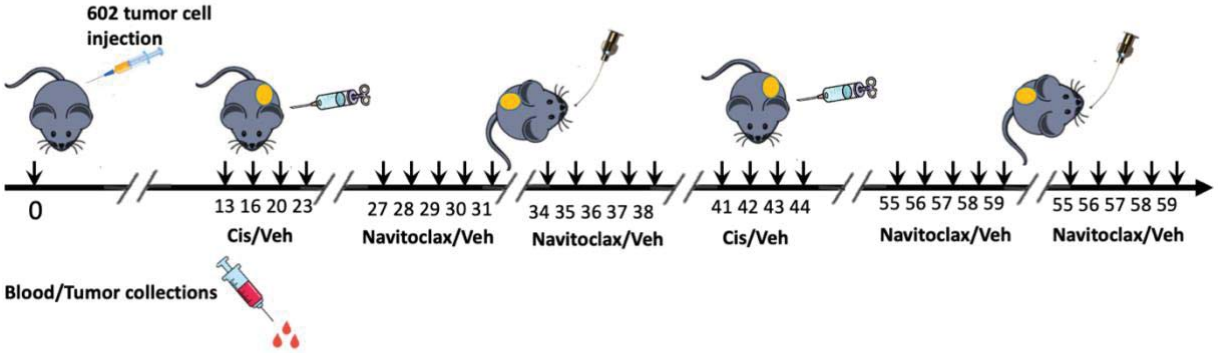

Figure S6. Animal experiments diagram.