SUPPLEMENTARY MATERIALS

Nanoreceptors promote mutant p53 protein degradation by mimicking selective autophagy receptors

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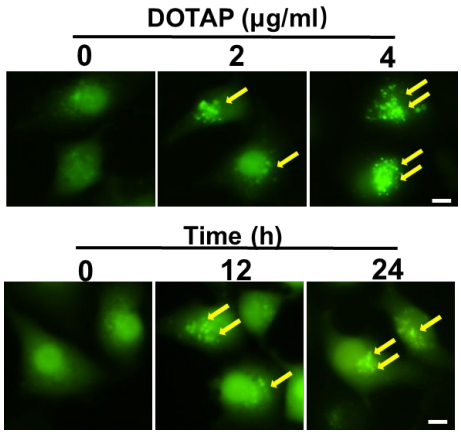

Fig S1. Fluorescence microscopic images of EGFP-LC3/MDA-MB-231 cells treated with DOTAP for indicate treatment. Dose: 0, 2 or 4 μg/mL of DOTAP for 12 h. Time: 0, 12 or 24 h for 2μg/mL DOTAP. Scale bar, 20 μm.

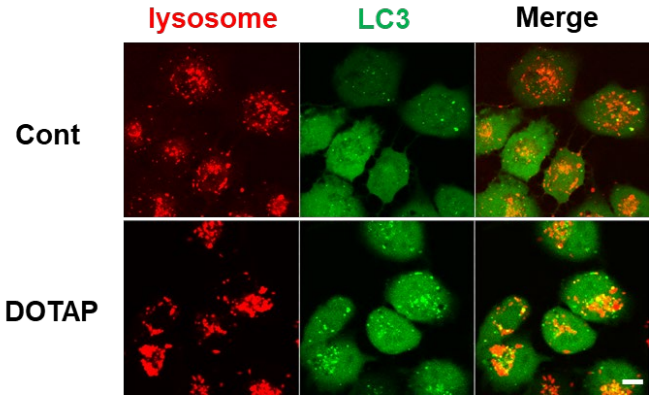

Fig S2. Confocal microscopic colocalization of LysoTracker and EGFP-LC3 dots in EGFP-LC3/MDA-MB-231 cells treated with PBS or DOTAP (2 μg/mL) for 24 h. Scale bar, 20 μm.

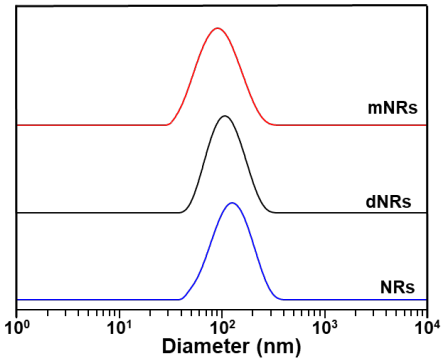

Fig S3. Size distribution of mNRs, dNRs and NRs determined by Dynamic Light Scattering (DLS).

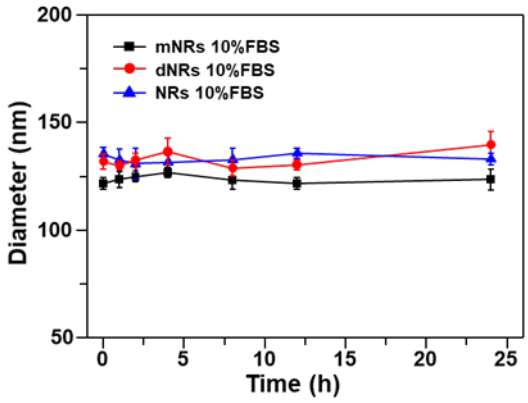

Fig S4. Changes in size of mNRs, dNRs and NRs after incubation in PBS containing 10% FBS.

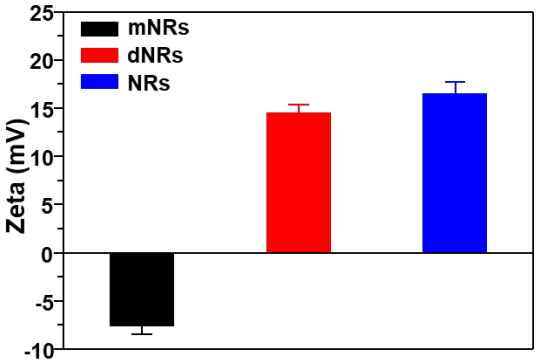

Fig S5. Zeta potential of mNRs, dNRs and NRs determined by Dynamic Light Scattering (DLS).

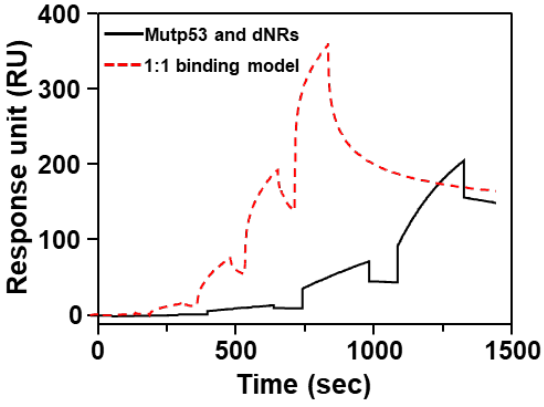

Fig S6. The interaction between mutp53 and dNRs was measured by surface plasmon

resonance (SPR).

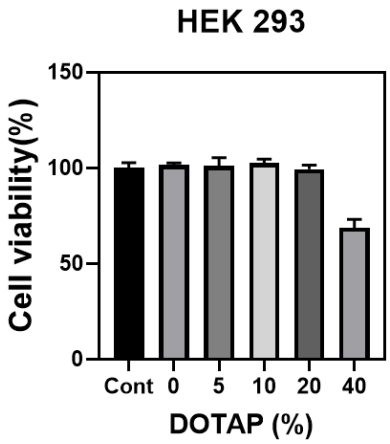

Fig S7. Cell viability of ES-2 cells after treatment with NRs (500 μg/mL) with different concentrations of DOTAP for 24 h.

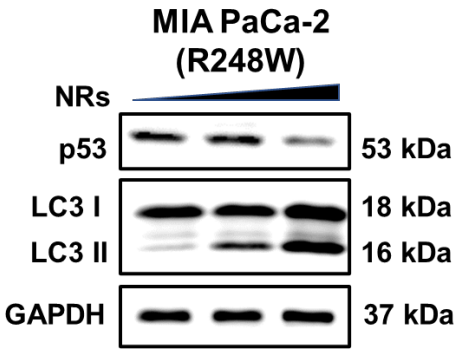

Fig S8. Western blotting of p53, LC3 and GAPDH in MIA PaCa-2 cells treated with 0, 250 or 500 μg/mL of NRs for 12 h.

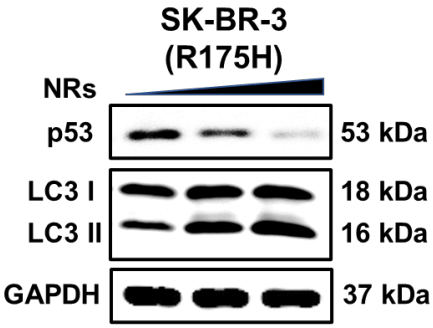

Fig S9. Western blotting of p53, LC3 and GAPDH in SK-BR-3 cells treated with 0, 250 or 500 μg/mL of NRs for 12 h.

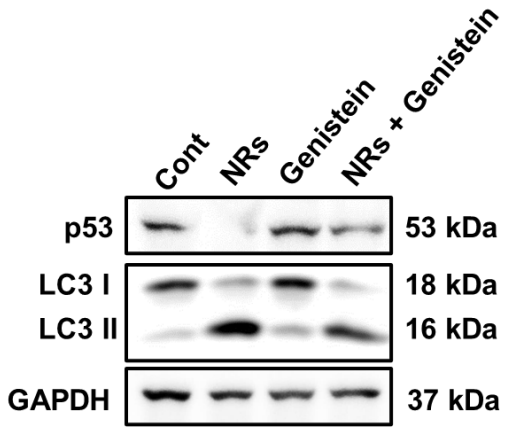

Figure S10. Western blotting of p53, LC3 and GAPDH in ES-2 cells after treated with 0, 100, 250 or 500 μg/mL of NRs for 12 h.

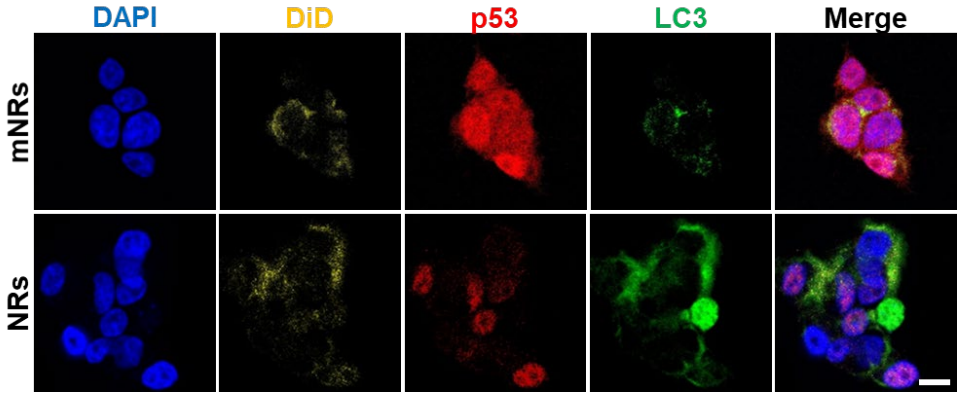

Figure S11. Confocal microscopy images of ES-2 cells treated with DiD-labeled mNRs or NRs (500 μg/mL) for 12 h, followed by immunostaining with anti-p53 and anti-LC3 antibodies. Nucleus was stained with DAPI. Scale bar, 20 μm.

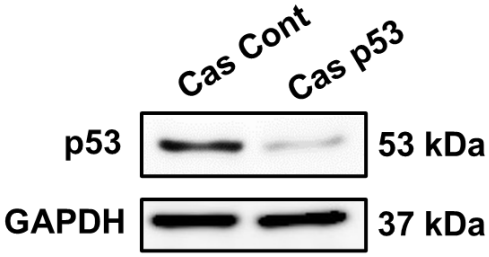

Figure S12. Western blotting of p53, and GAPDH in p53 knockout ES-2 cell lines by CRISPR/Cas9 technology.

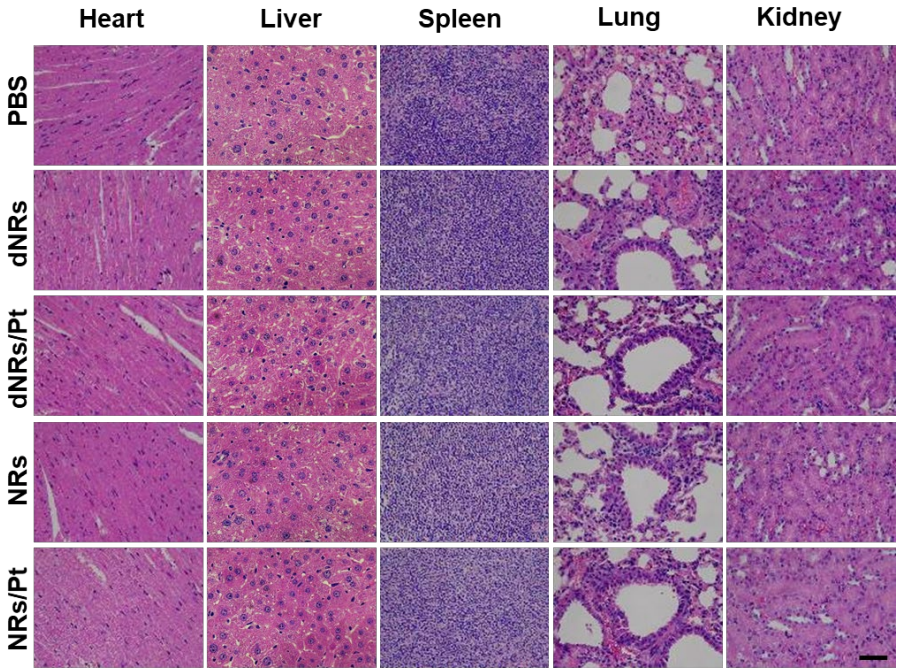

Figure S13. Hematoxylin & eosin (H&E) staining of representative tissue sections from the major organs of BALB/c mice after intravenous administration indicate treatment for 24 h. Dosing: 25 mg/kg for dNRs, dNRs/Pt, NRs and NRs/Pt. Scale bar: 50 μm.

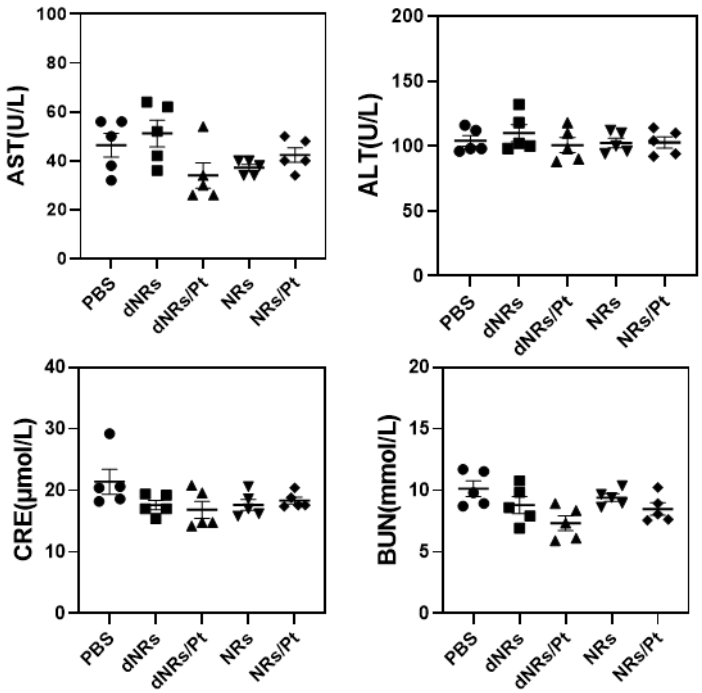

Figure S14. Serum level of ALT (alanine aminotransferase), AST (aspartate aminotransferase), CRE (creatinine) and BUN (blood urea nitrogen) in BALB/c mice after intravenous administration of PBS, dNRs(25 mg/kg), dNRs/Pt (25 mg/kg), NRs(25 mg/kg) or NRs/Pt (25 mg/kg) for 24 h. Mean ± s.e.m. n=5. The normal range in female BALB/c mice: ALT, 40-170 (U/L); AST, 67-381 (U/L); BUN, 7-31 (μmol/L); SCR, 0.2-0.5 (μmol/L).

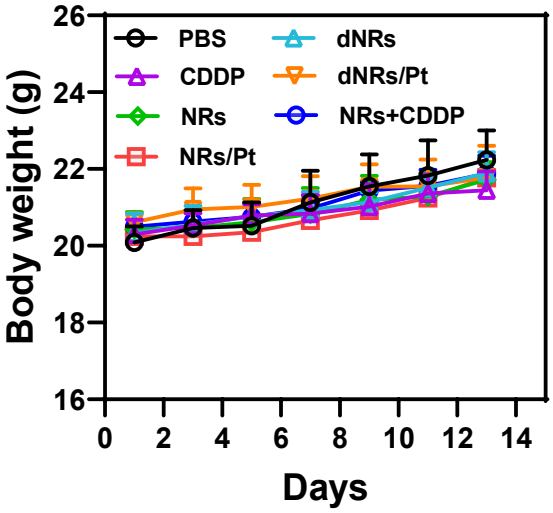

Figure S15. The change in body weight for the various treatment groups during the 13-day therapeutic period in the ES-2 model. Dosing: 25 mg/kg for dNRs, dNRs/Pt, NRs and NRs/Pt, 1 mg/kg for CDDP. IV injection every two days.

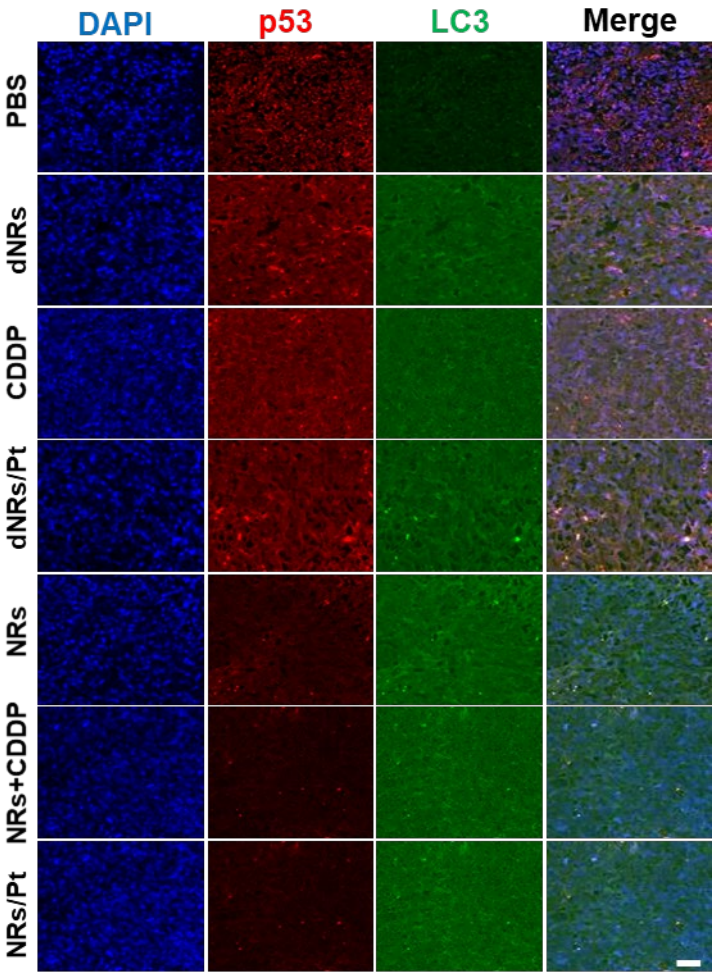

Figure S16. Representative immunofluorescence images of tumor tissue for the various treatment groups in the ES-2 model after staining with DAPI (nucleus) or antibodies against p53 and LC3. Dosing: 25 mg/kg for dNRs, dNRs/Pt, NRs and NRs/Pt. Scale bar, 50 μm.

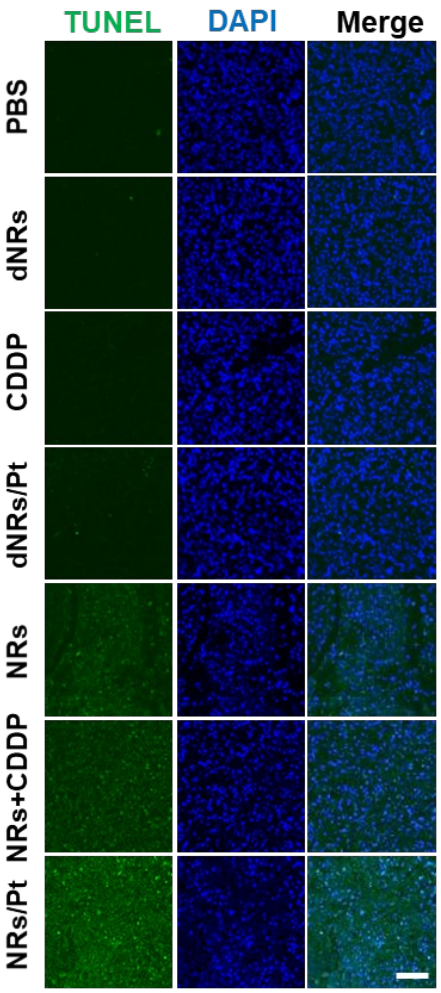

Figure S17. TUNEL staining (green) of sections from the various groups in the ES-2 model was performed to show apoptotic cells. Nucleus were stained with DAPI (blue). A representative image is shown for each treatment group. Scale bar, 50 μm.

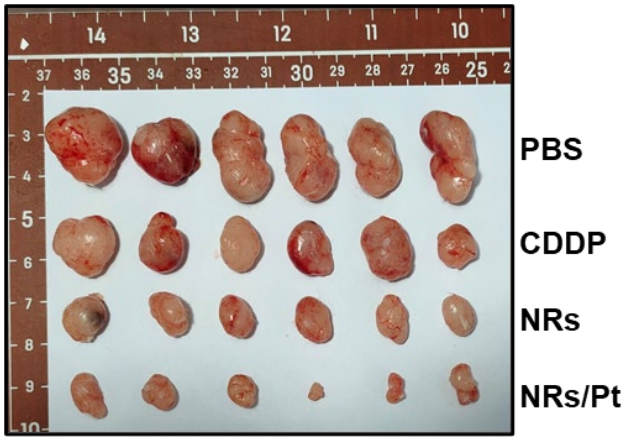

Figure S18. The photographs of excised tumors for the various treatment groups during the 13-day therapeutic period in the PDX model. Dosing: 25 mg/kg for dNRs, dNRs/Pt,

NRs and NRs/Pt, 1 mg/kg for CDDP. IV injection every two days.