

# Repurposing Antimalarial Pyronaridine as a DNA Repair Inhibitor to Exploit the Full Potential of Gold-Nanoparticle-Mediated Radiation Response

Nolan Jackson <sup>1</sup>, Abdulaziz Alhussan <sup>1</sup>, Kyle Bromma <sup>1</sup>, David Jay <sup>2</sup>, James C. Donnelly <sup>3</sup>, Frederick G. West <sup>2,3</sup>, Afsaneh Lavasanifar <sup>4</sup>, Michael Weinfeld <sup>2</sup>, Wayne Beckham <sup>1,5</sup> and Devika B. Chithrani <sup>1,6,7,8,9,\*</sup>

## Supplementary section S1: UV Visible spectroscopy data

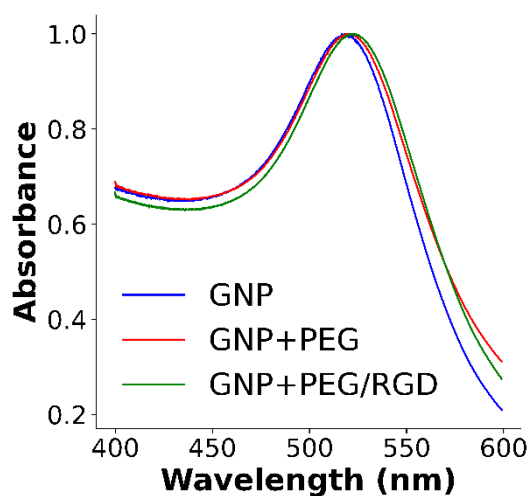


Figure S1. UV Visible spectra for GNP, GNP-PEG and GNP-PEG-RGD.

## Supplementary section S2: Characterization of GNP complex in presence of PYD

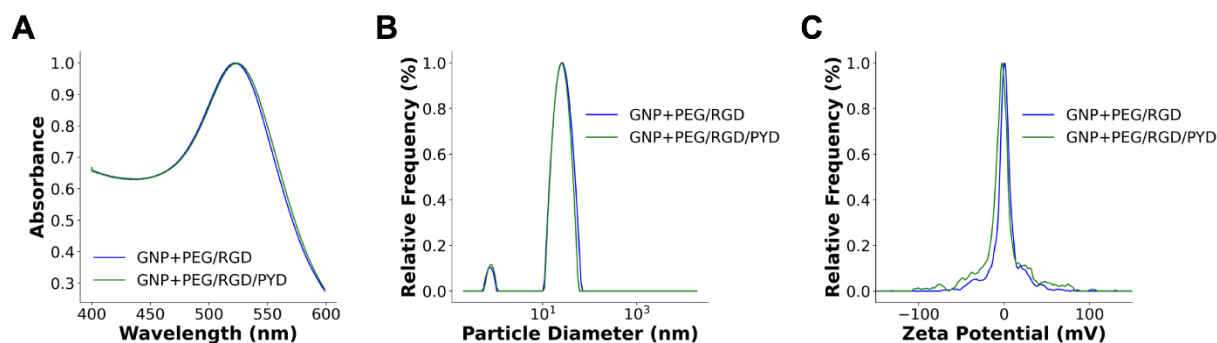
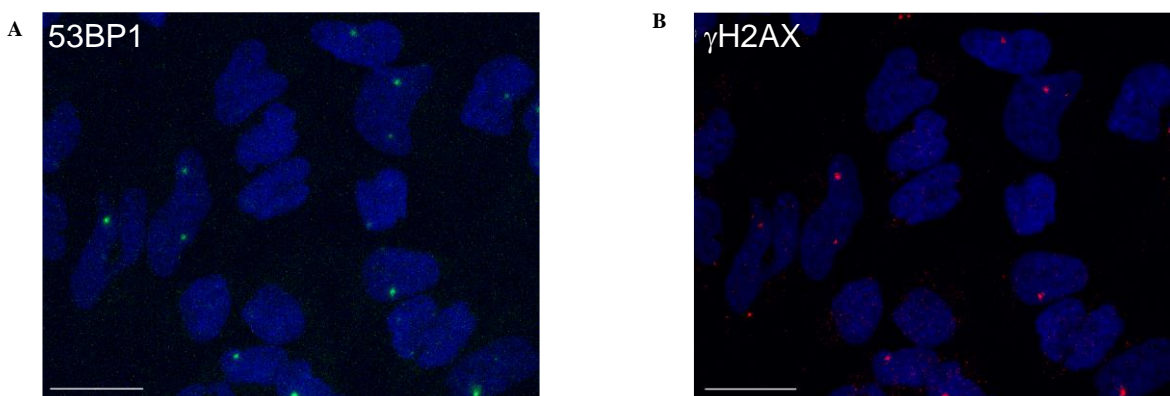


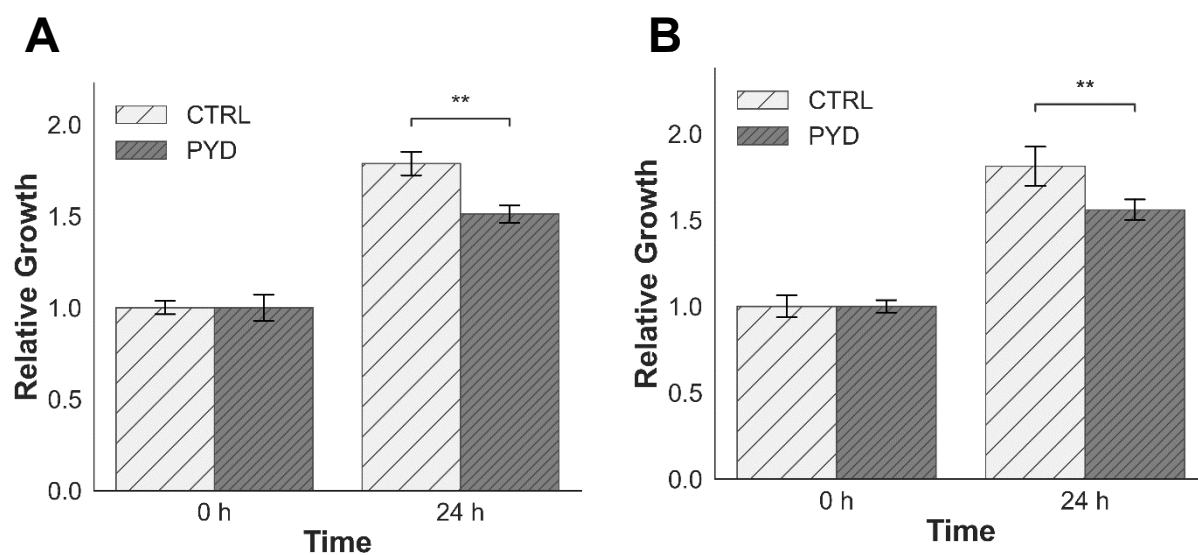
Figure S2. A-C) UV Visible spectra, Dynamic light scattering and zeta potential data, respectively, for GNP complex and GNP complex in the presence of PYD.

### Supplementary section S3: Co-localization of foci



**Figure S3.** 53BP1 and  $\gamma$ H2AX foci for HeLa cells treated with a 2 Gy radiation dose.

### Supplementary section S4: Characterization of GNP complex in presence of PYD



**Figure S4.** Relative growth of cells after a 2 Gy radiation dose at 6 MV delivered by a clinical linear accelerator. A-B) Reduction in relative growth 24 h post irradiation for HeLa and HCT-116 cells, respectively. Cells were dosed with PYD at a concentration of 500 nM.