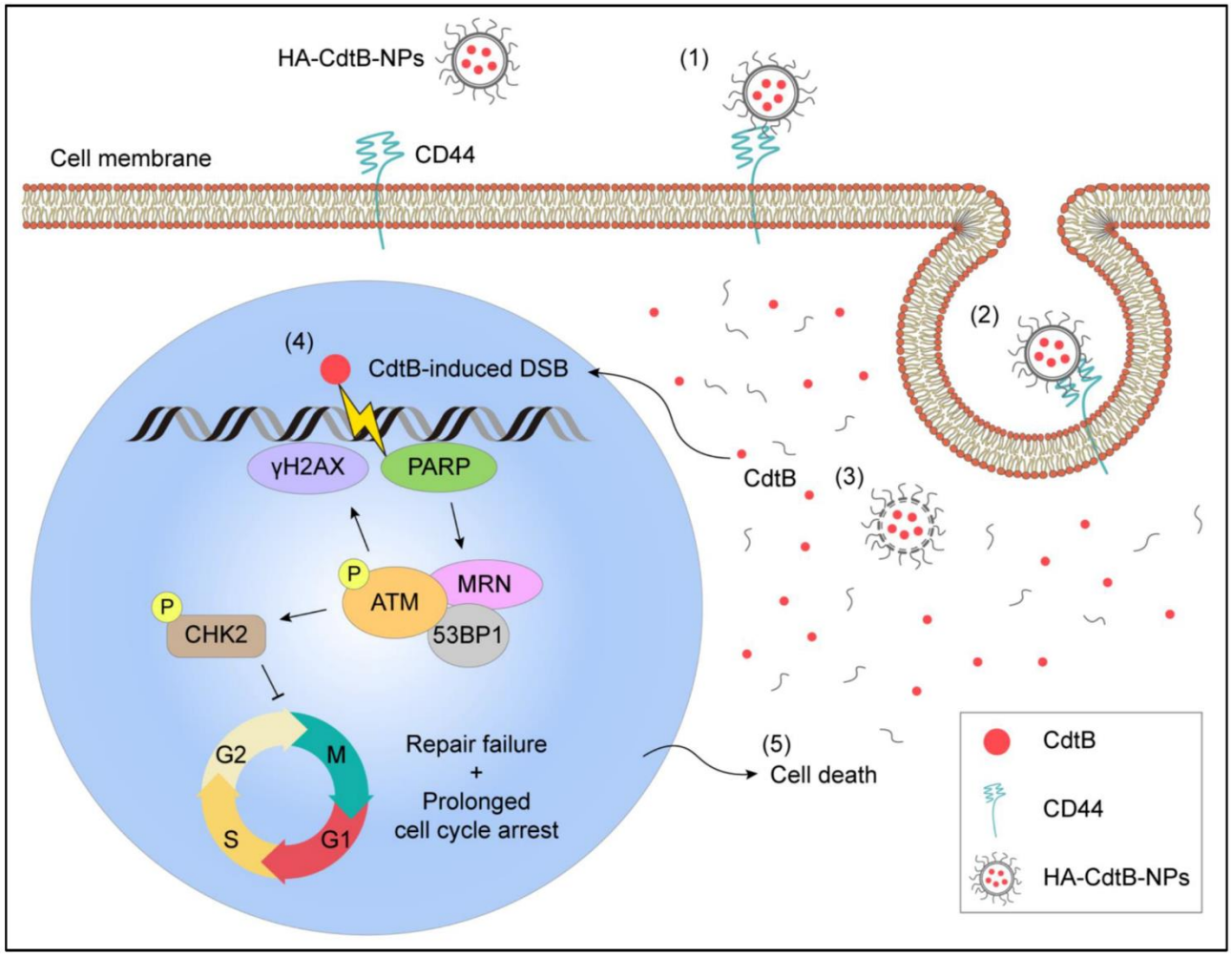
Graphical Abstract



The effects of HA-CdtB-NPs on radioresistant PCa cells. (1) HA-based nanoparticles specifically bind to CD44 on the cell membrane and (2) the encapsulated CdtB is delivered into PCa cells through endocytosis. (3) With nuclear translocation signal (NLS), CdtB enters the nucleus and (4) exerts its DNase activity to effectively induce DSBs, leading to cell cycle arrest. (5) As the cancer cells fail to repair the extensive DNA damage and experiences prolonged cell cycle arrest, it is sentenced to death. This study unveils the mechanism behind the radiosensitivity enhancement in PCa cells promoted by HA-CdtB-NPs, and thus provides a promising target-specific agent for the development of a new therapy against radioresistant PCa.