Photodynamic therapy is a combination of light and sensitizers for cancer treatment. The sensitizers and the light are non-toxic but when they interact with each other, toxins like reactive oxygen species are generated that can kill cancer cells. Photodynamic therapy has the beauty of targeting tumors by the sensitizers themselves and the light, so its side-effect is much lower than chemotherapy or radiotherapy. However, the need of light for activation has some limitations as light cannot penetrate deeply into tissue, so photodynamic therapy has been widely used for skin disease treatment but not for deep cancer treatment. In this talk, I will discuss the possible solutions for developing photodynamic therapy for deep cancer treatment and some new progress in Photodynamic therapy and the invention of new sensitizers that can be activated by UV, X-ray, microwave and ultrasound to produce reactive oxygen species for deep cancer treatment as well as immunity enhancement. New ideas for the combination of photodynamic therapy and radiation to overcome radiation resistance will be discussed.