

Literature Report

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Date: 2020-12-3

RESEARCH ARTICLE

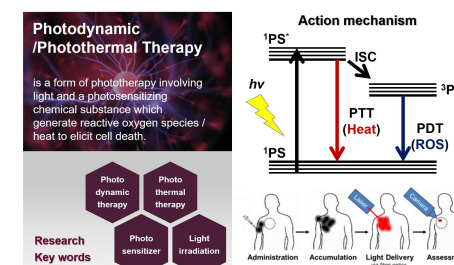
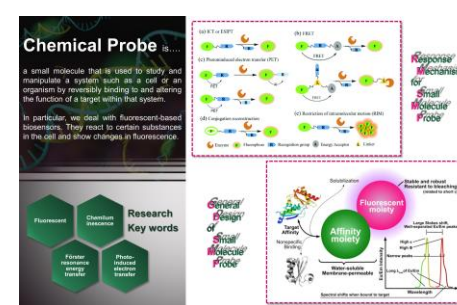
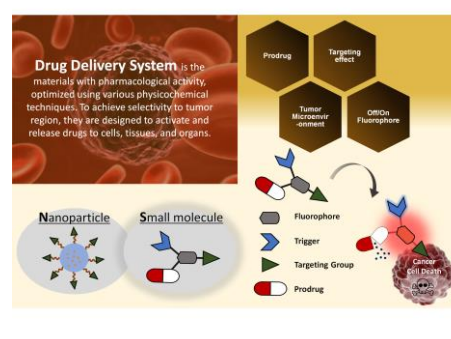
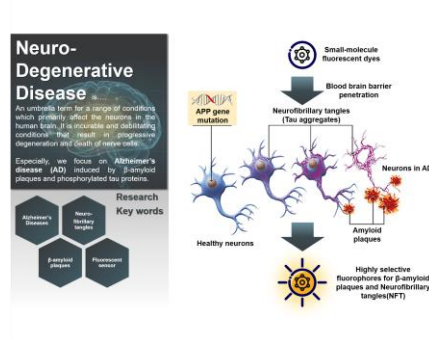
An Ethacrynic Acid-Brominated BODIPY Photosensitizer (EA-BPS) Construct Enhances the Lethality of Reactive Oxygen Species in Hypoxic Tumor-Targeted Photodynamic Therapy

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Neurodegenerative disease, Drug delivery system, Chemical probe, Photodynamic / thermal therapy.

Photodynamic /Photothermal Therapy

is a form of phototherapy involving light and a photosensitizing chemical substance which generate reactive oxygen species / heat to elicit cell death.

**Research
Key words**

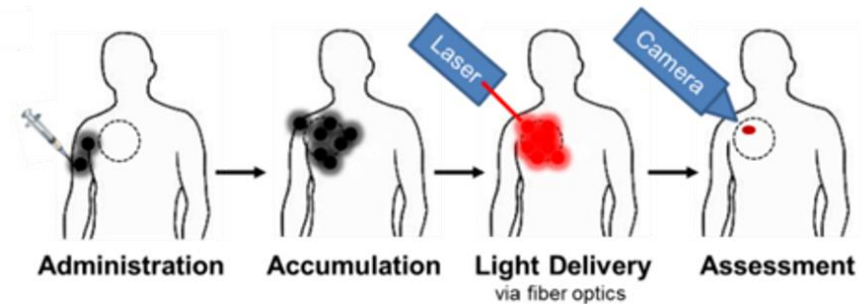
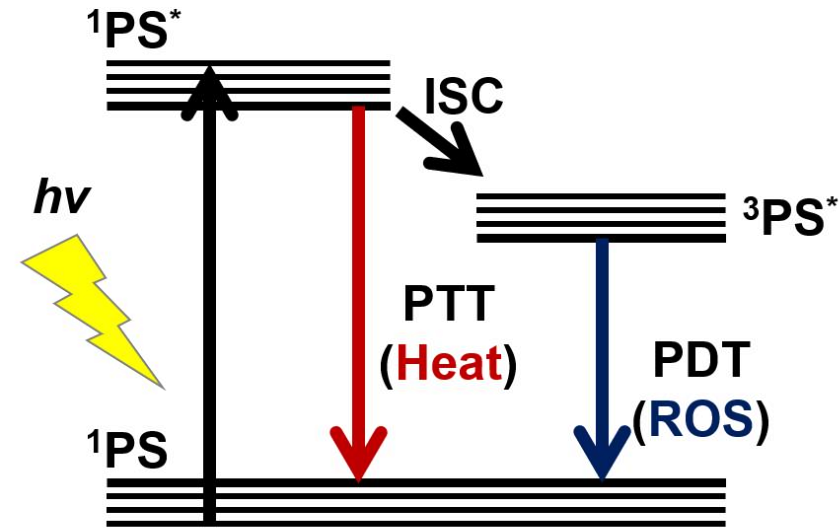
Photo
dynamic
therapy

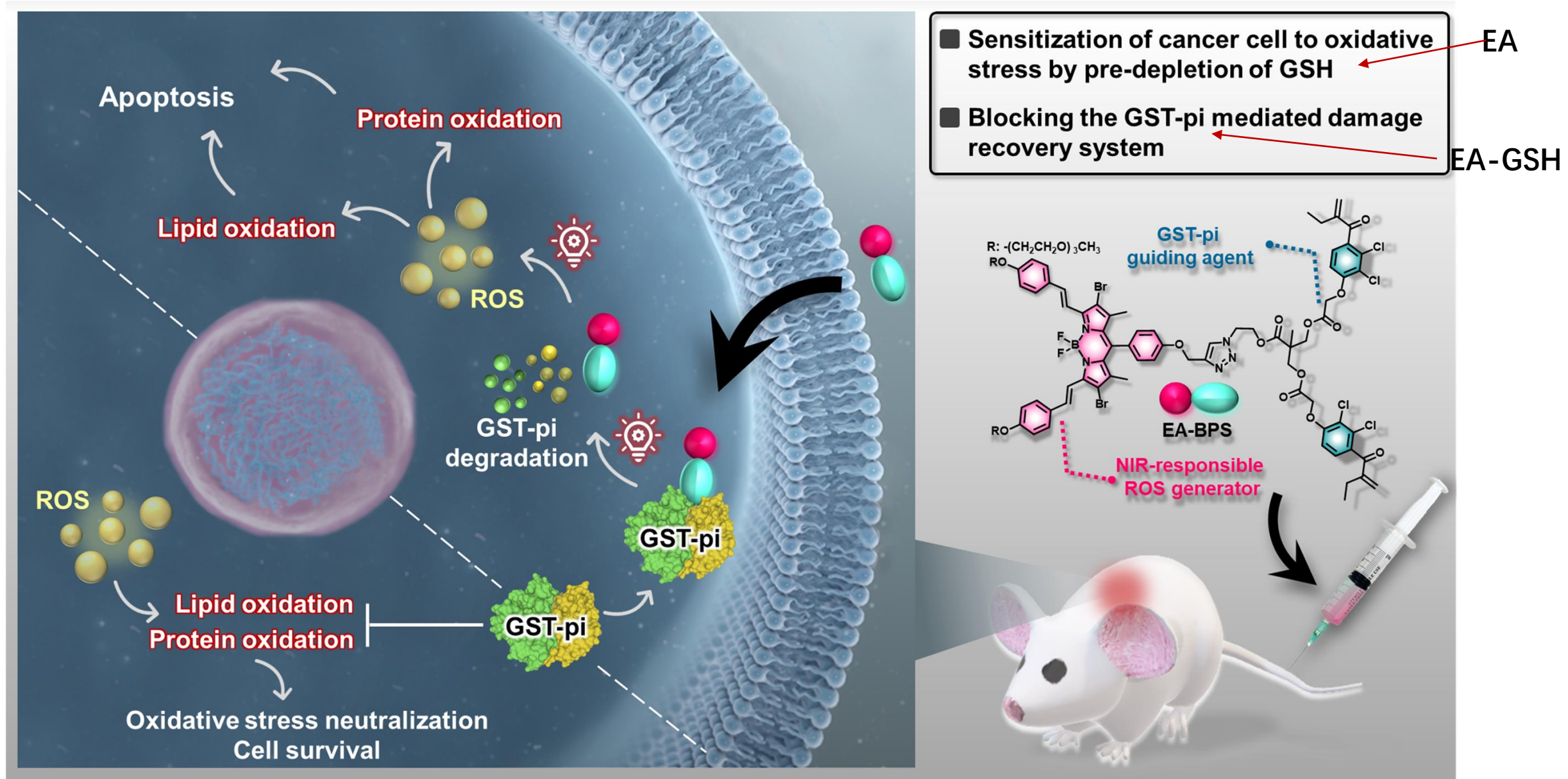
Photo
thermal
therapy

Photo
sensitizer

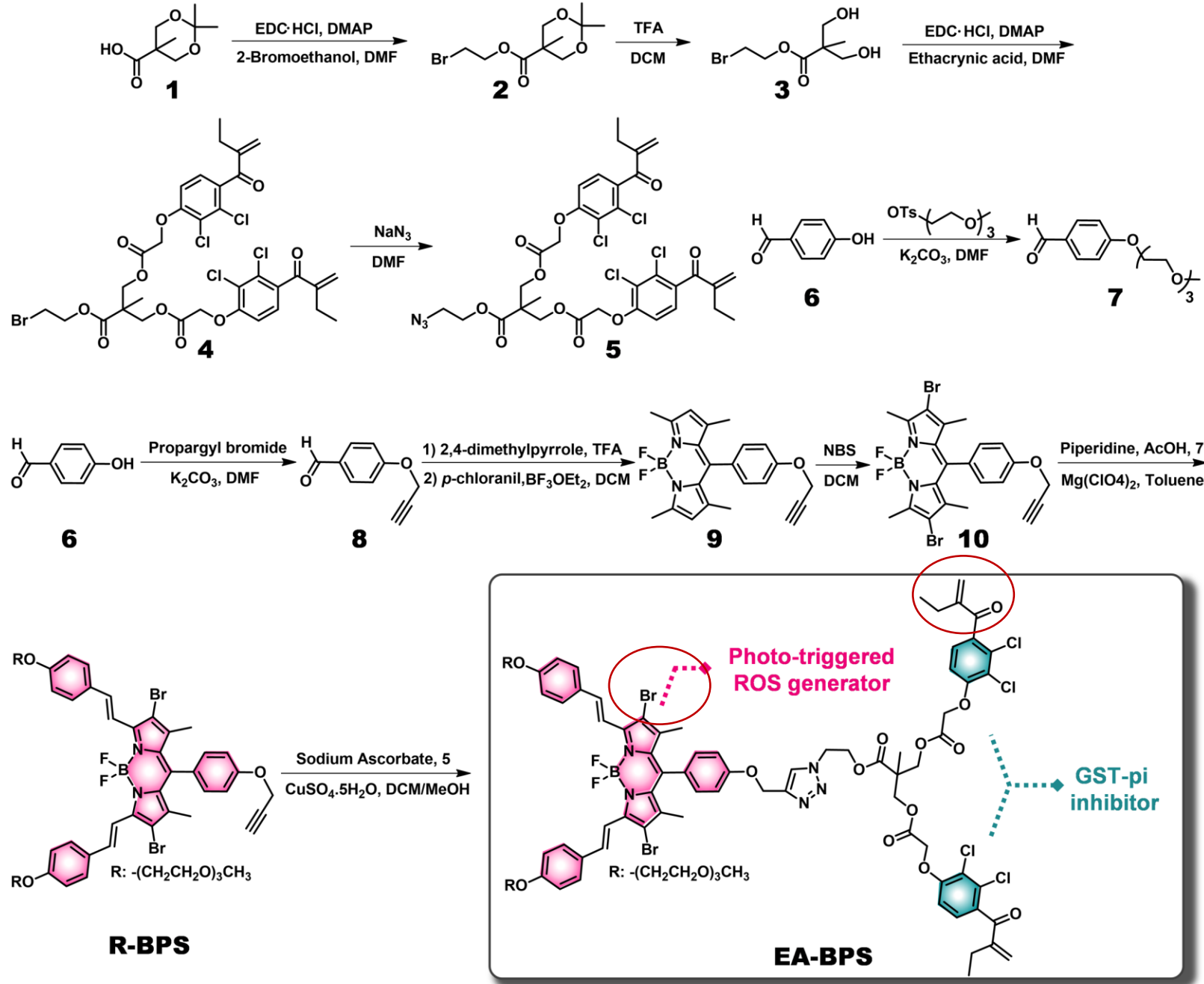
Light
irradiation

Action mechanism





1. EA-BP与PDT发挥协同作用；
2. EA-BP降低了GST-pi活性，并增强了脂质过氧化作用；
3. EA-BPS在缺氧条件下还可以改善基于PDT的细胞毒性。



Scheme 1. Synthesis of **R-BPS** and **EA-BPS**.

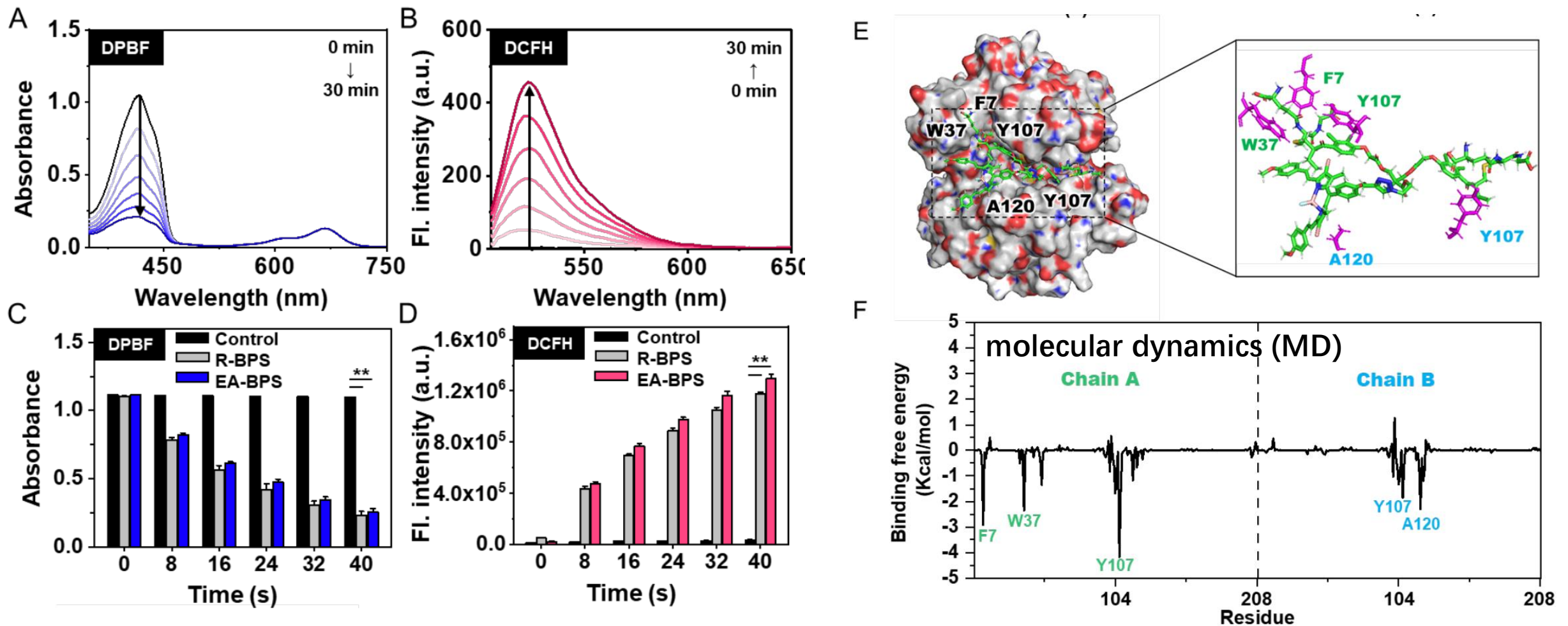


Figure 2. Photodynamic and GST-pi binding properties of **EA-BPS**.

Fig a : a mixture of EA-BPS and DPBF

DPBF : chemical probe for singlet oxygen (Type 2 ROS)

DCFH ROS sensor : primarily for Type 1 ROS

Conclusion: R-BPS and EA-BPS are capable of promoting ROS production

Y107 residues are present in the active site

Fig 3A : In MDA-MB-231 cell line, EA-BPS was taken up more effectively than R-BPS and time dependent .(lipophilic and interactions)

Fig3b:NAC, an effective ROS quencher; ROS probe (DCFH-DA, green).

Fig3c: ascertain which of these mechanisms Singlet Oxygen Sensor Green (SOSG)

Fig3d: a Type I mechanism, dihydroethidium (DHE) , detection of $O_2^{\cdot -}$ –

Fig3e: HPF, detection of hydroxyl radical and peroxynitrite anions

Fig3f: monitored the levels of GSH expression using a thiol-tracker

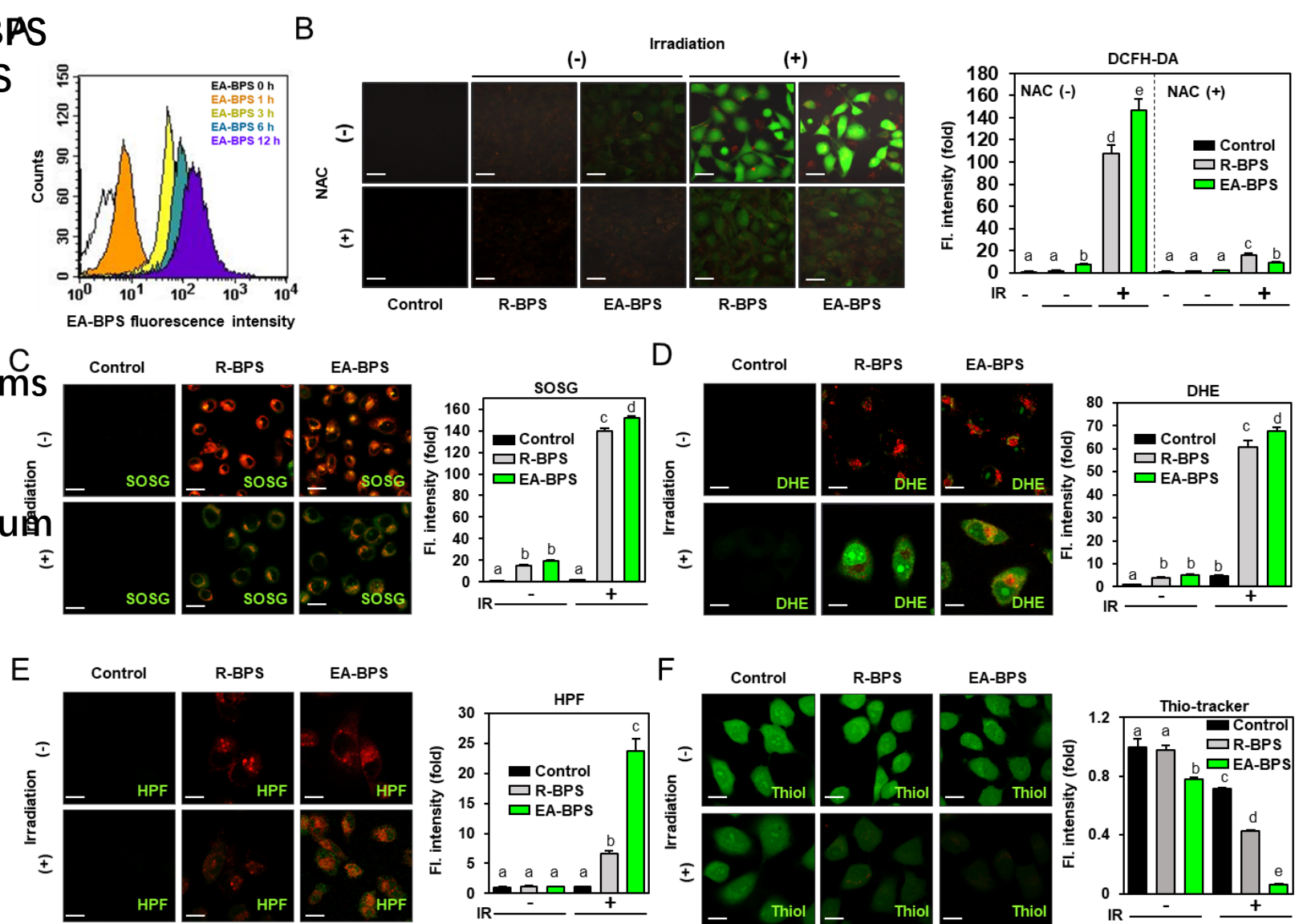


Figure 3. PDT sensitizer potential of EA-BPS.

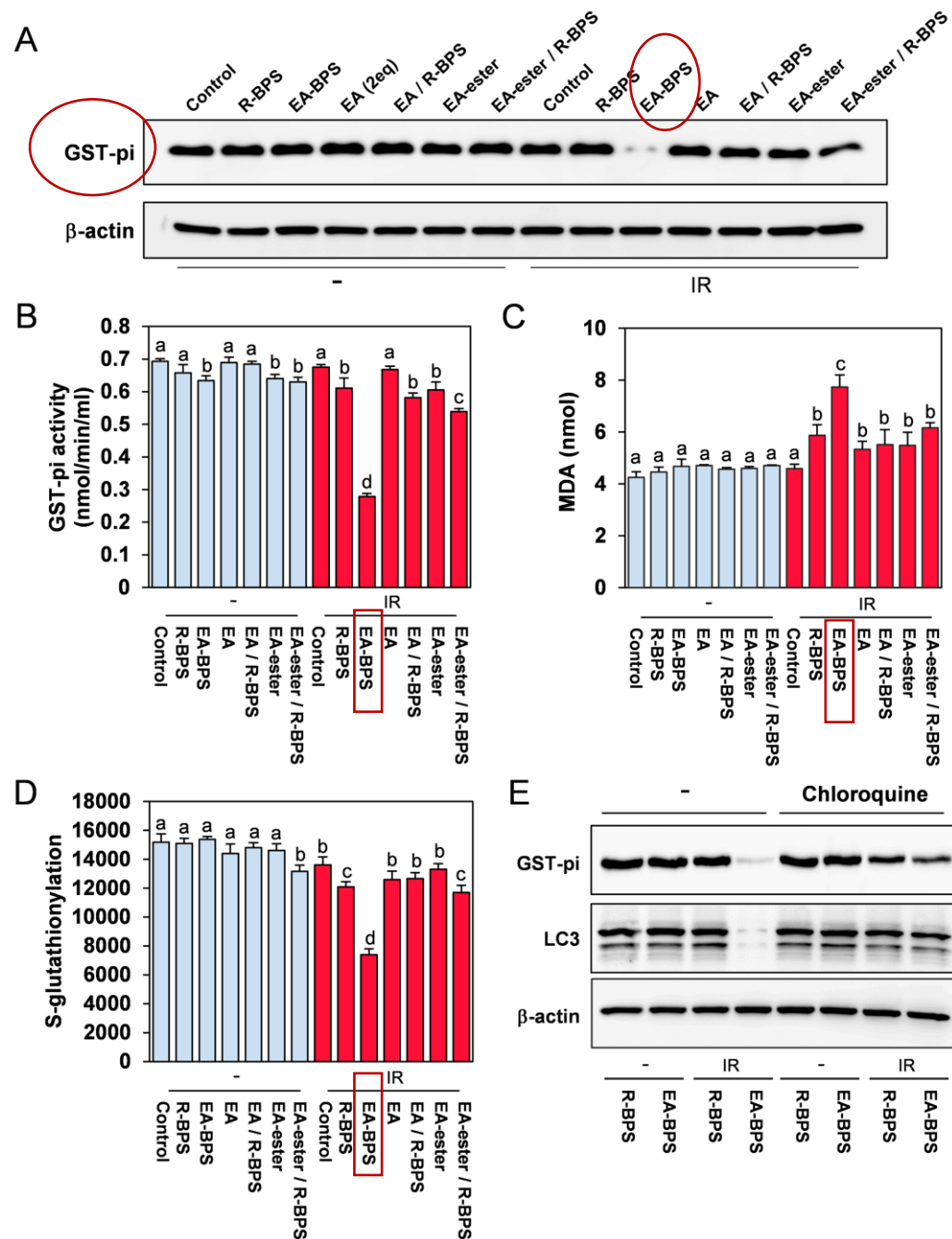


Figure 4. Effect of **EA-BPS** with and without photoirradiation on lysosomal degradation-dependent way

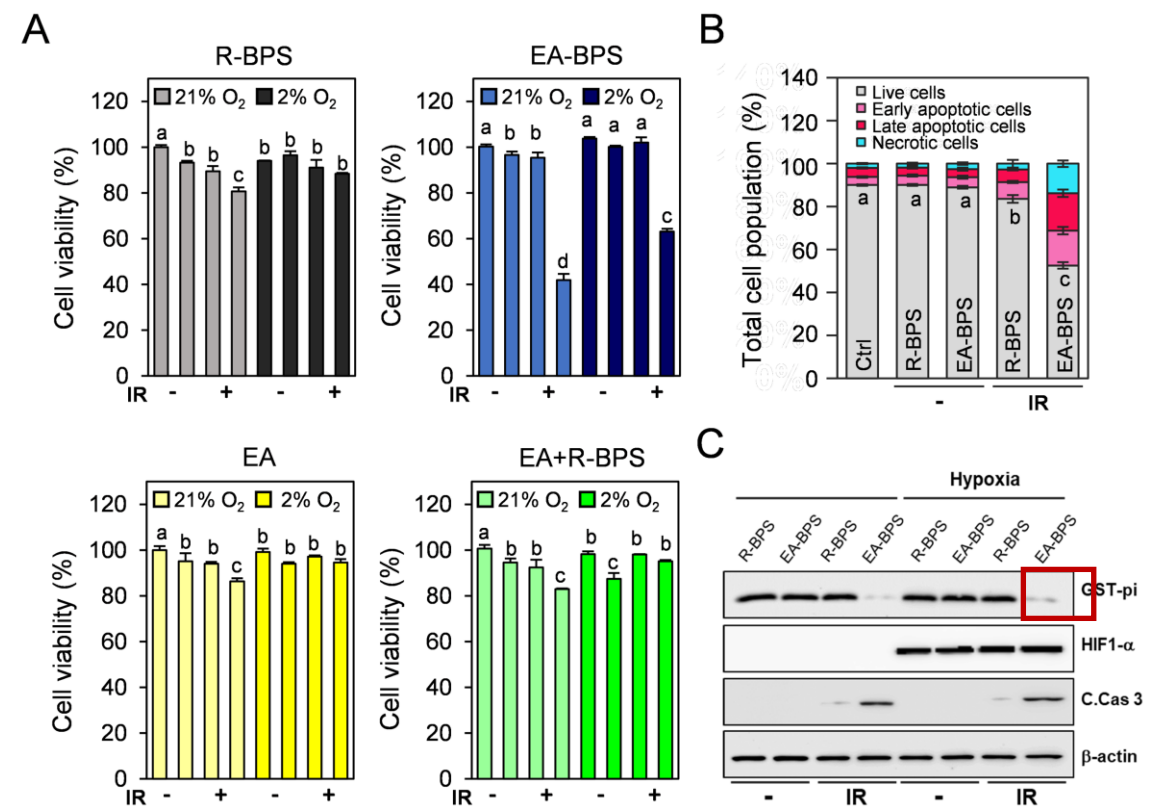


Figure 5. Hypoxia induced apoptotic cell death by **EA-BPS**.

Fig4c: MDA, one of the final products of lipid peroxidation

Fig4d: GST-pi can promote the Sglutathionylation of damaged proteins

Fig4e:(CQ) (a lysosomal inhibitor), LC3 (an autophagy marker) protein

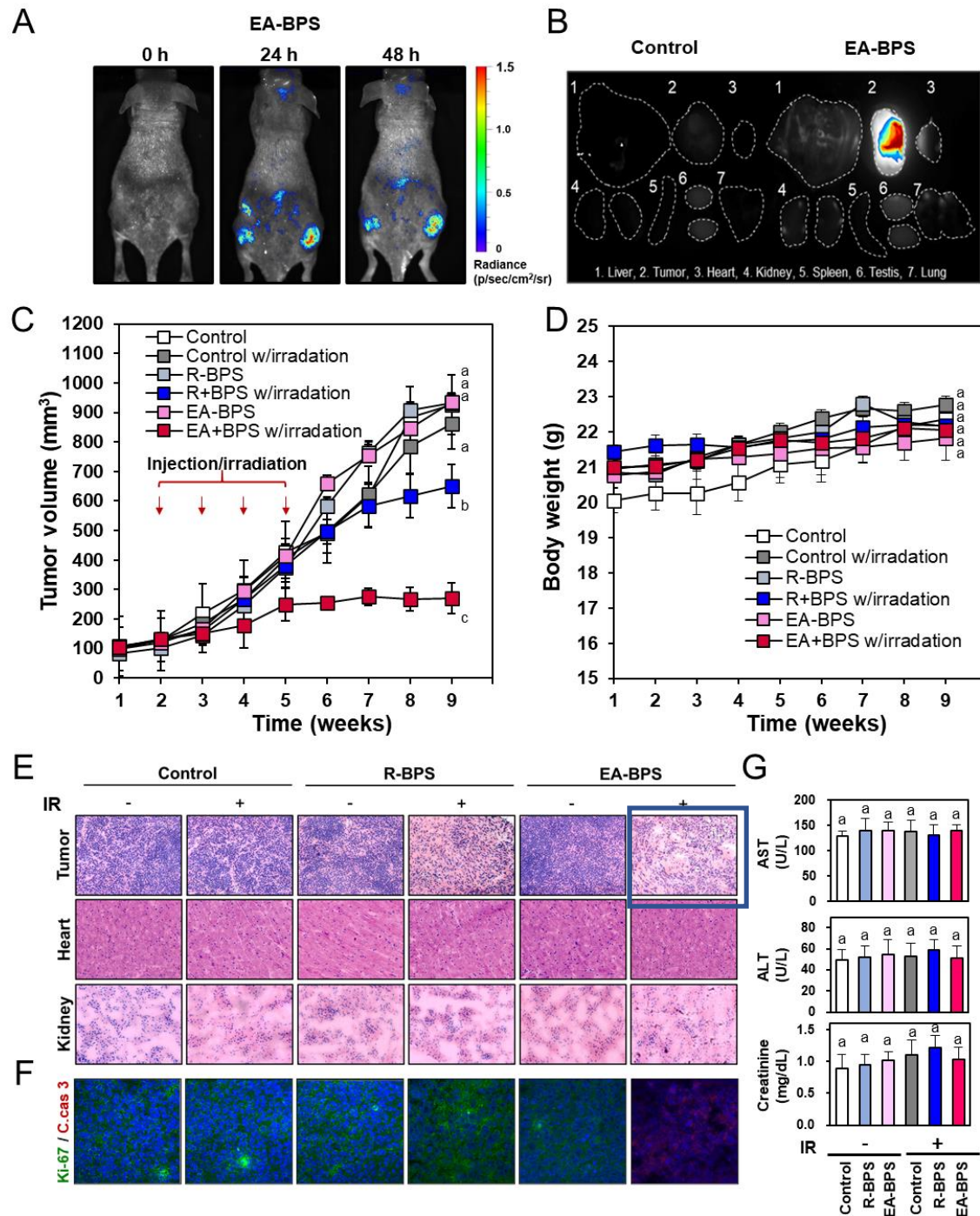


Fig 6c: at the tumor regions showed a statistically significant reduction in tumor growth and volumes

Fig 6e: characteristic apoptotic cells

Fig 6f: caspase-3 (red) ,
Ki-67 expression levels (green) :cell proliferation

Fig6g AST (天门冬氨酸7转氨酶) , ALT (丙氨酸氨基转移酶) 和肌酐活性

Figure 6. In vivo photodynamic effects and tumor regression seen inMDA-MB-231 xenograft mouse models.