Literature ReportⅡ

Reporter: Zhang Yue

Date: 2020-12-31

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Article

Red Light-Initiated Cross-Linking of NIR Probes to Cytoplasmic RNA: An Innovative Strategy for Prolonged Imaging and Unexpected Tumor Suppression

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史海斌

2006年于苏州大学获得有机化学硕士学位
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2012-2014年在美国斯坦福大学医学院分子影像中心从事博士后研究。
2014年入职苏州大学医学部放射医学与防护学院。

研究方向：

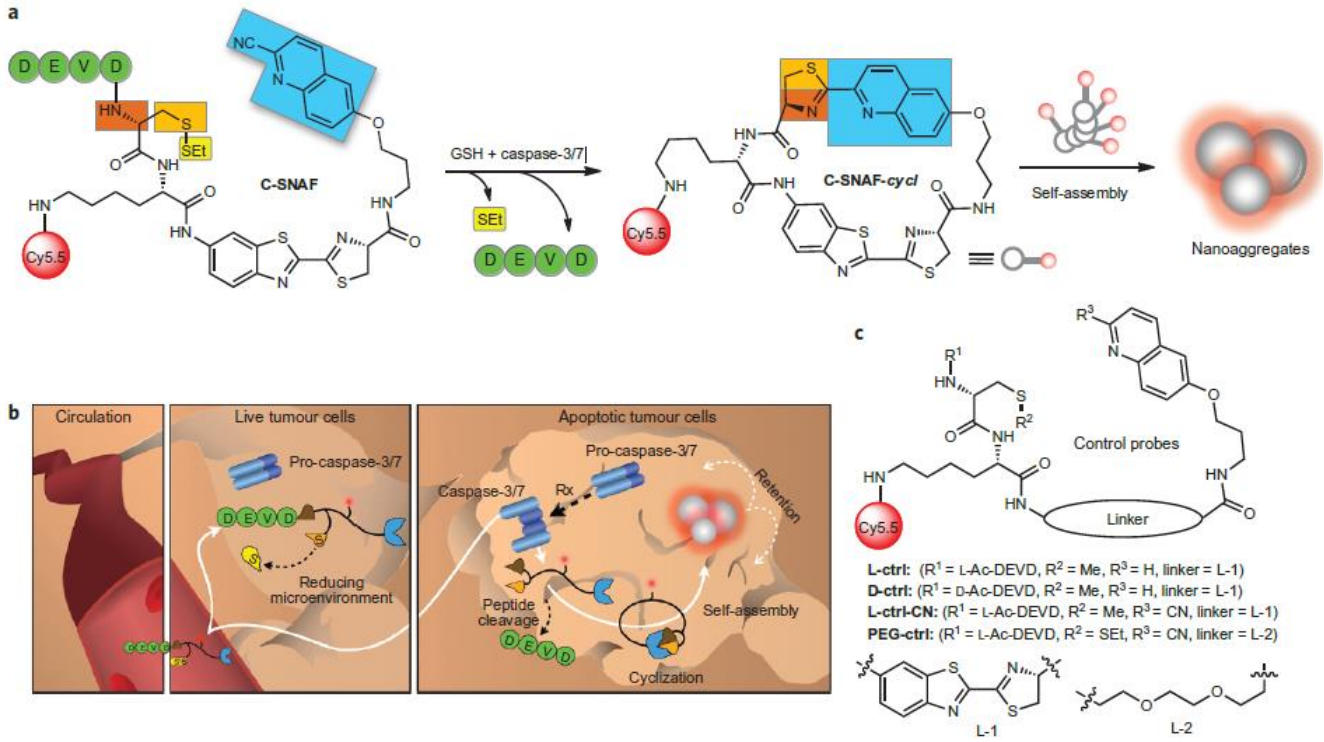
- 智能化肿瘤分子影像探针的构建及生物应用研究
- 发展多模态、多功能分子影像探针及其在肿瘤等重大疾病诊断与治疗中的应用研究
- 放射性药物分子的设计合成与生物应用研究

Introduction

nature chemistry
ARTICLES
PUBLISHED ONLINE: 28 APRIL 2014 | DOI: 10.1038/NCHEM.1920

Bioorthogonal cyclization-mediated *in situ* self-assembly of small-molecule probes for imaging caspase activity *in vivo*

Deju Ye[1†], Adam J. Shuhendler[1†], Lina Cui[1], Ling Tong[2], Sui Seng Tee[1], Grigory Tikhomirov[1], Dean W. Felsher[2] and Jianghong Rao[1*]



Nat. Chem. 2014, 6, 519−526.

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Communication
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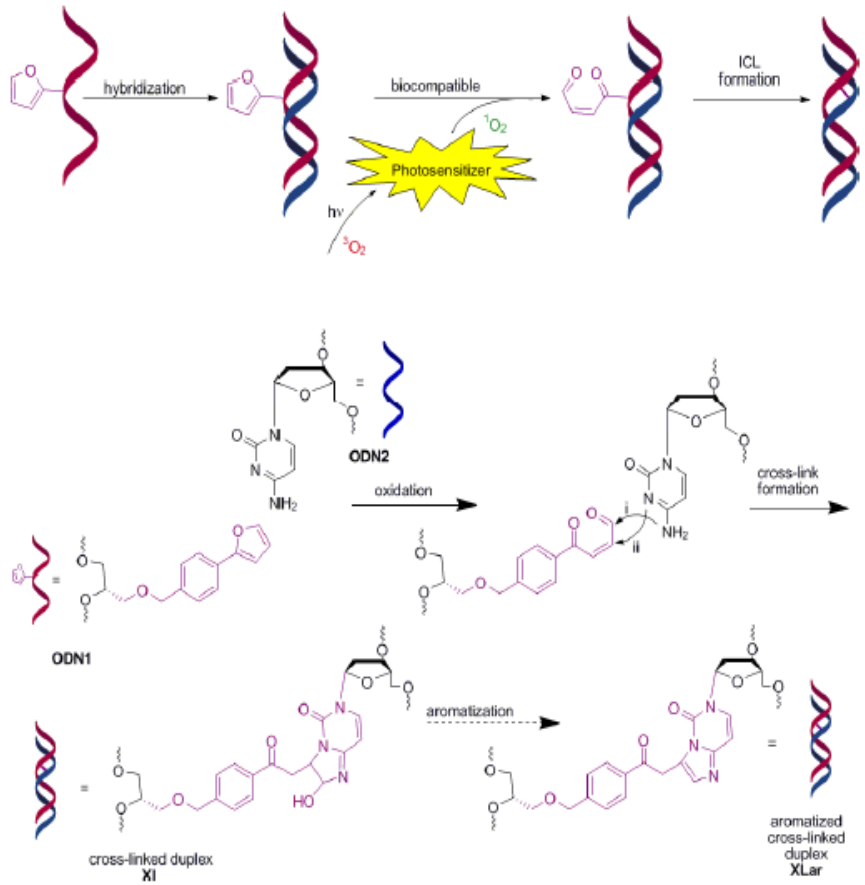
Sequence Specific DNA Cross-Linking Triggered by Visible Light

Marieke Op de Beeck and Annemieke Madder*



J. Am. Chem. Soc. 2012, 134, 10737

Introduction

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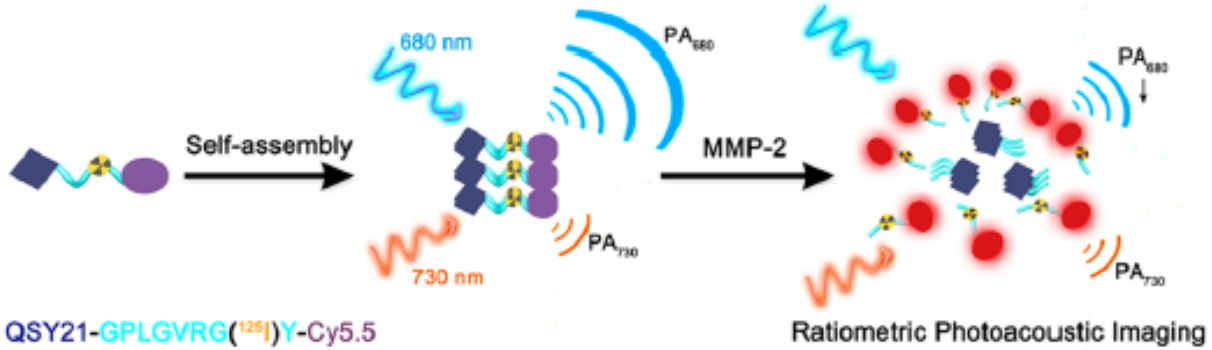
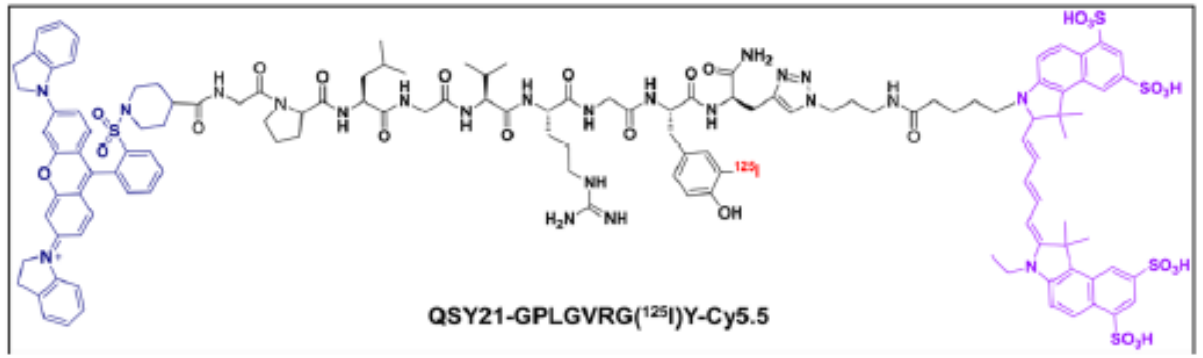
Article
Cite This: J. Am. Chem. Soc. 2019, 141, 3265−3273
pubs.acs.org/JACS

Quantitatively Visualizing Tumor-Related Protease Activity *in Vivo* Using a Ratiometric Photoacoustic Probe

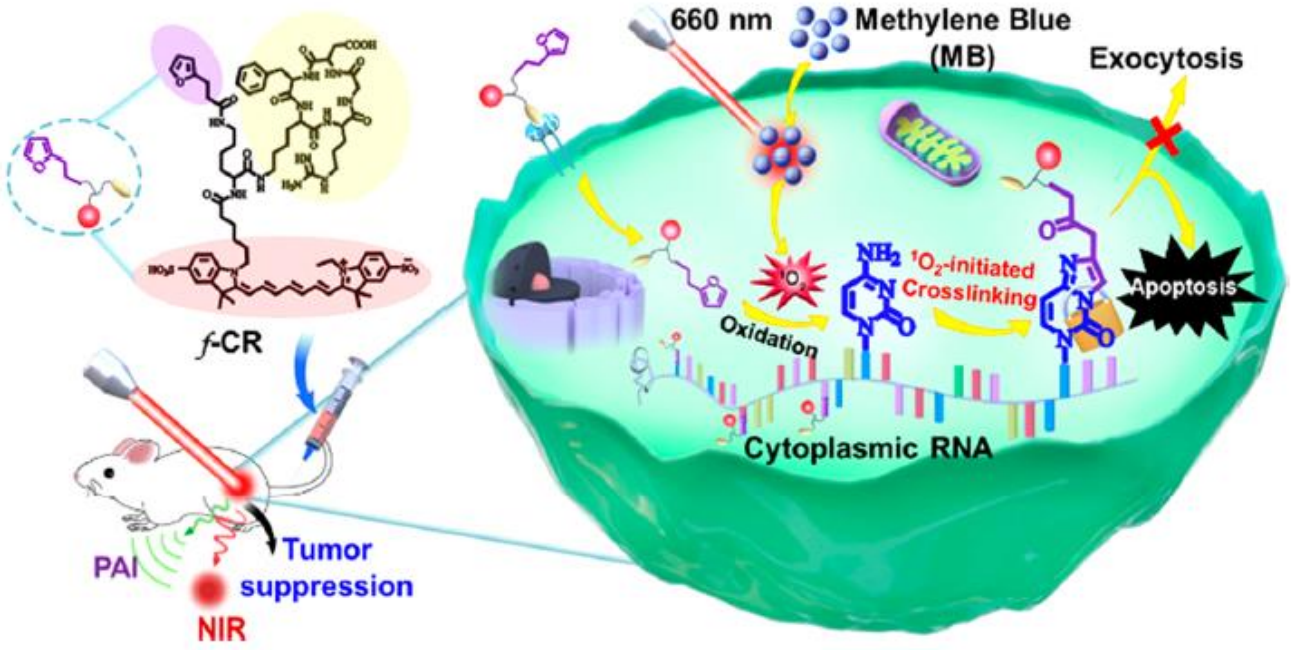
Ling Yin,[‡,∥] Hao Sun,[⊥] Hao Zhang,[†] Lei He,[†] Ling Qiu,[#] Jianguo Lin,[#] Huawei Xia,[†] Yuqi Zhang,[†] Shunjun Ji,[*,‡] Haibin Shi,[*,†] and Mingyuan Gao[*,†,§]

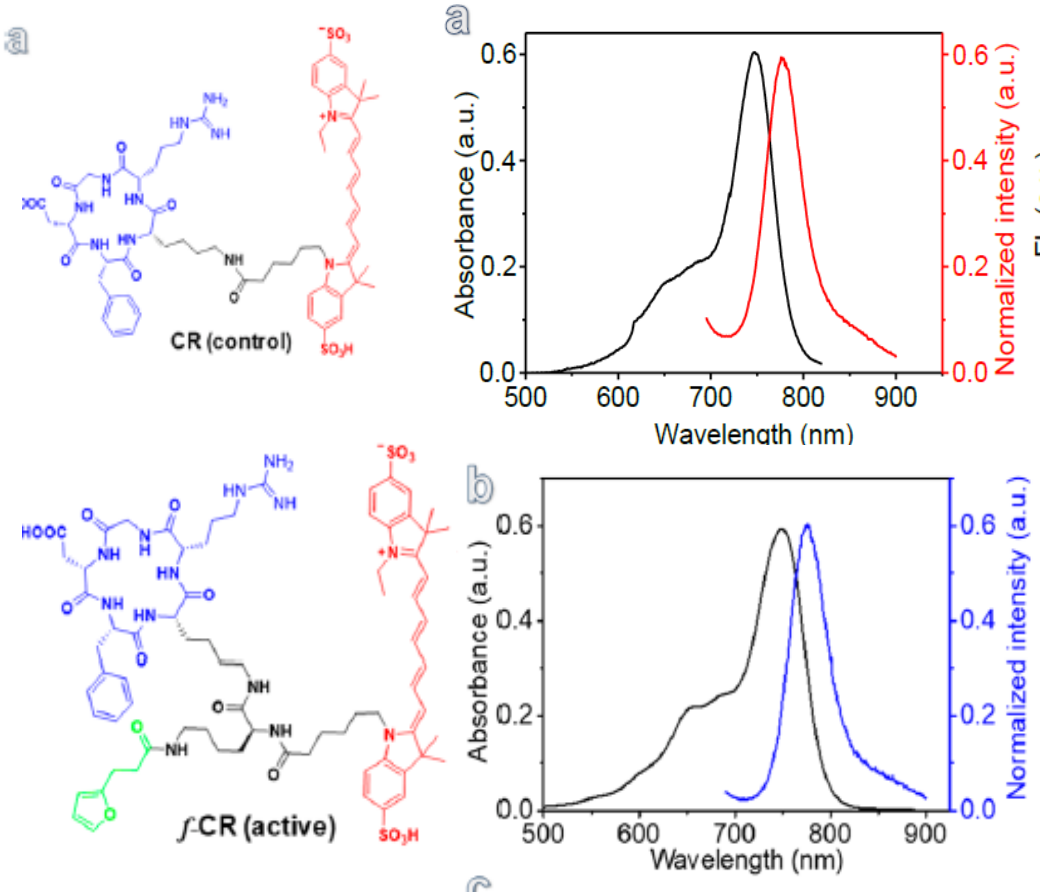




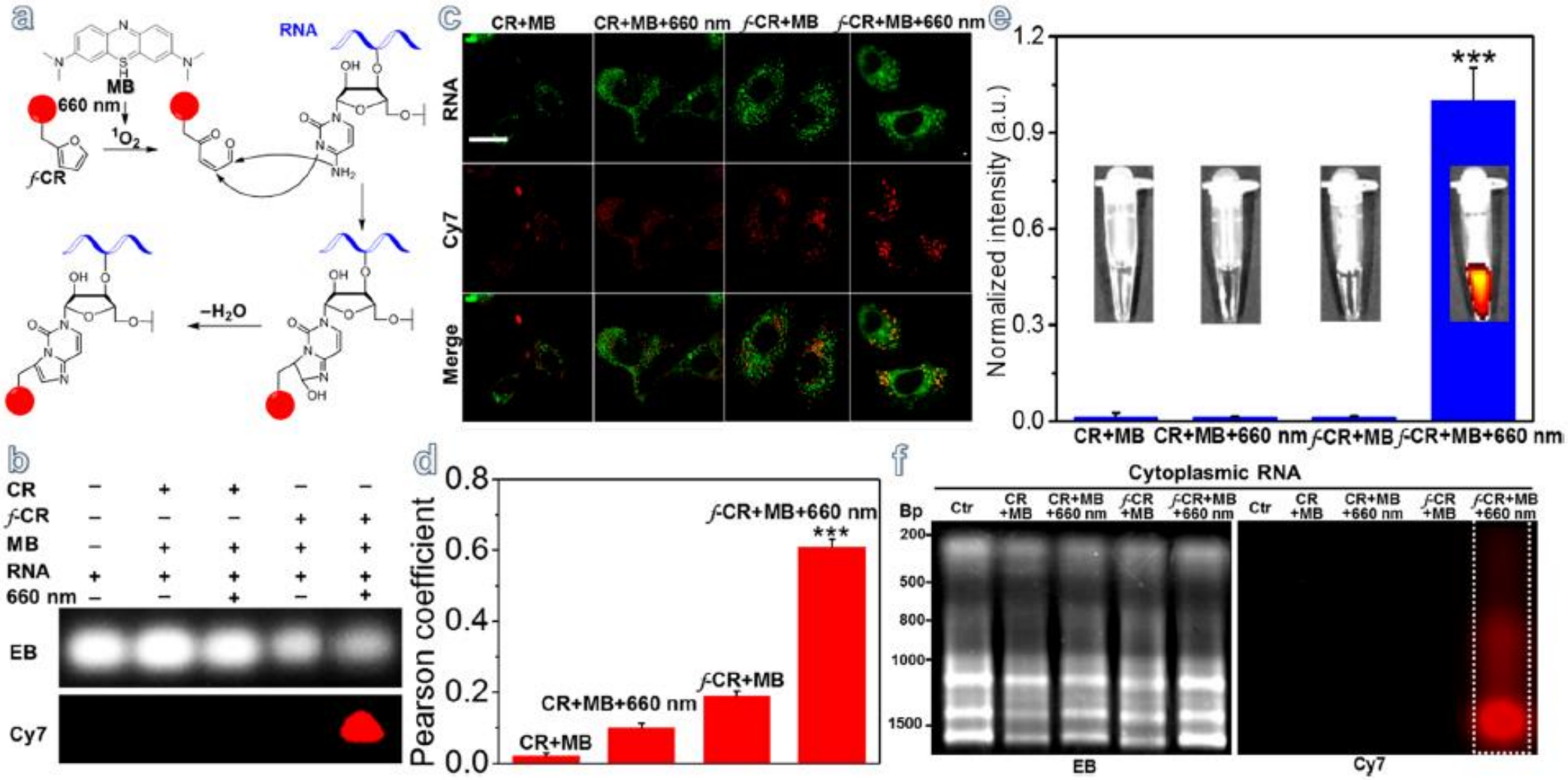
J. Am. Chem. Soc. 2019, 141, 3265

Introduction

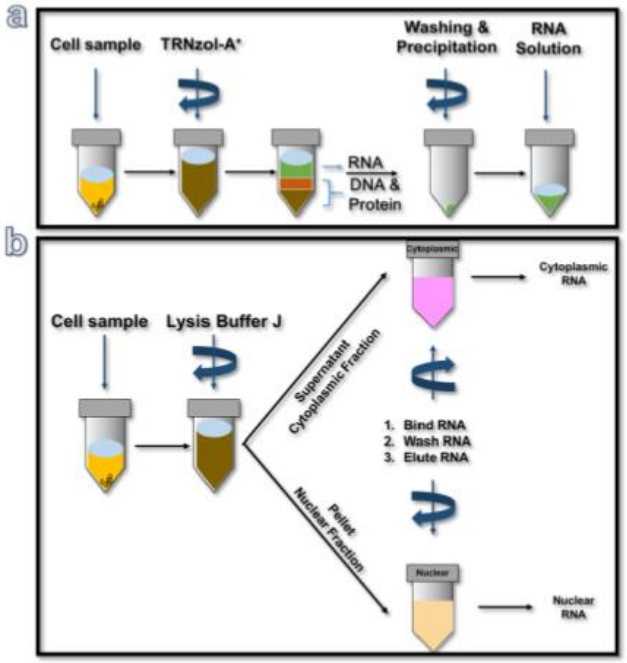




f-CR对细胞内RNA的识别



验证与细胞质的RNA发生交联



Scheme S2. The method of extracting cell total RNA using TRNzol-A⁺ (a) and separately extracts cytoplasmic and nuclear RNA using RNA cytoplasm & nucleus purification kit (b).

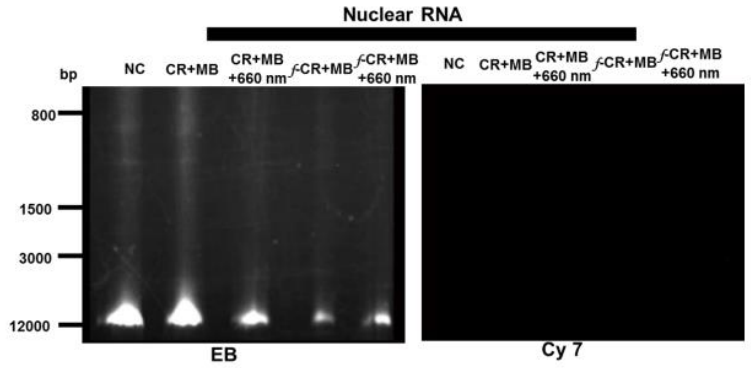


Figure S20. Fluorescence pictures of EB (left) and Cy7 (right) under gel electrophoresis of RNA extracted from the nucleus of 4T1 cells by using Cytoplasmic & Nuclear RNA Purification Kit.

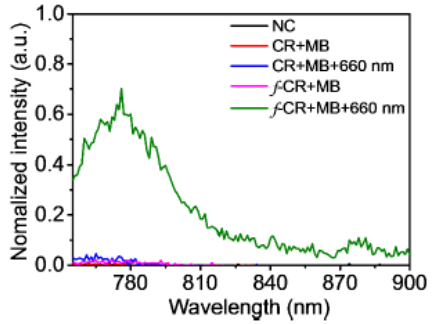
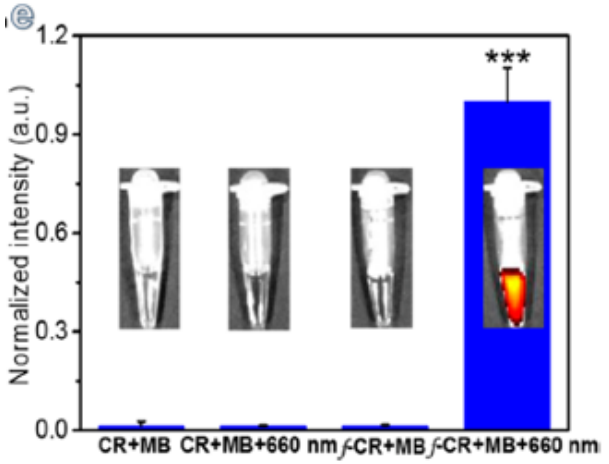


Figure S19. Fluorescence spectra of the cytoplasmic RNAs from different groups of cells.



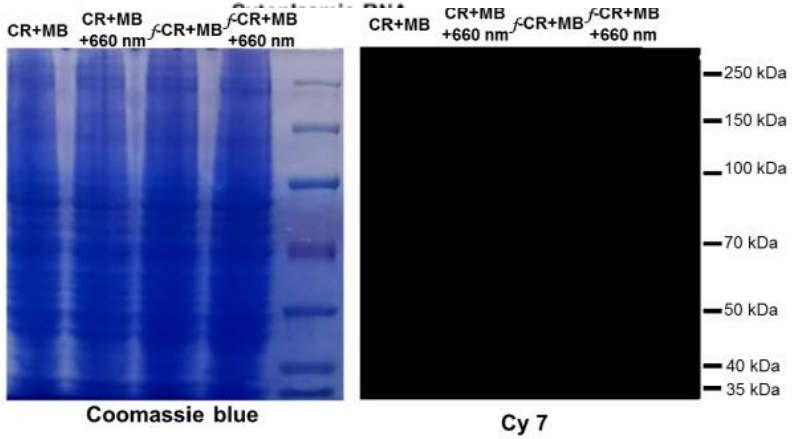
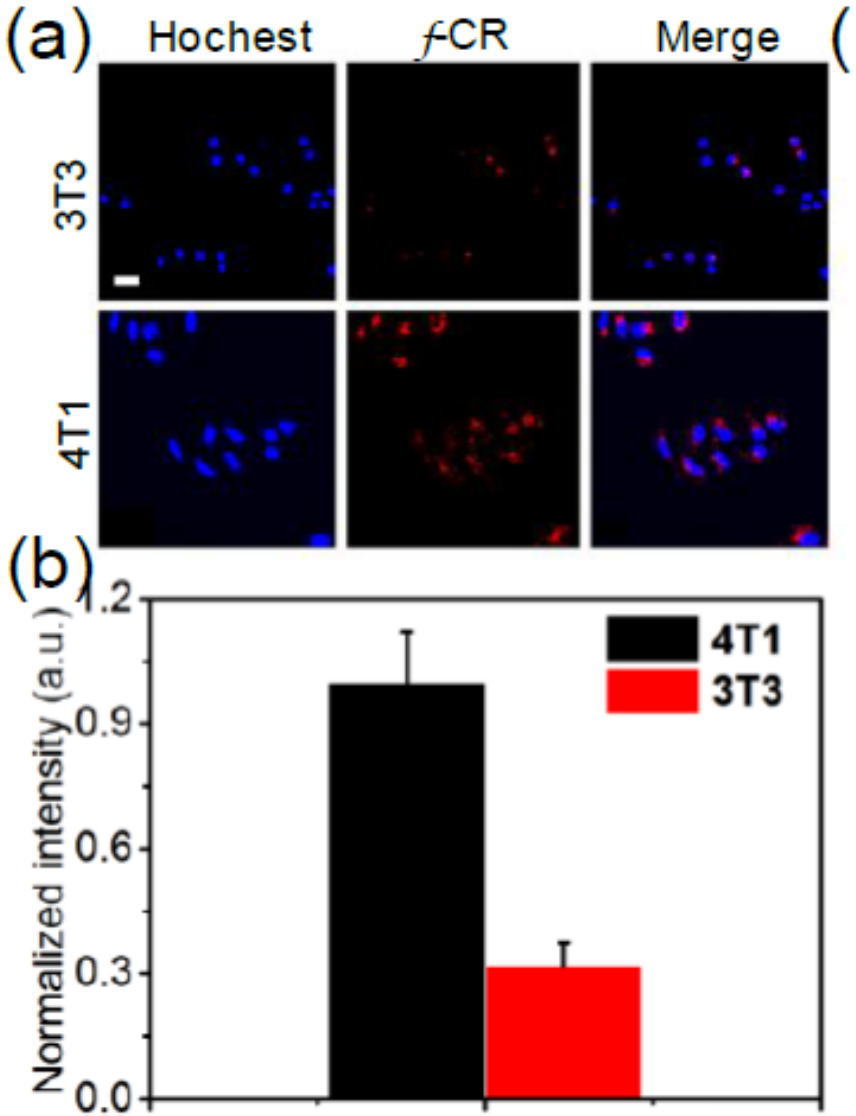


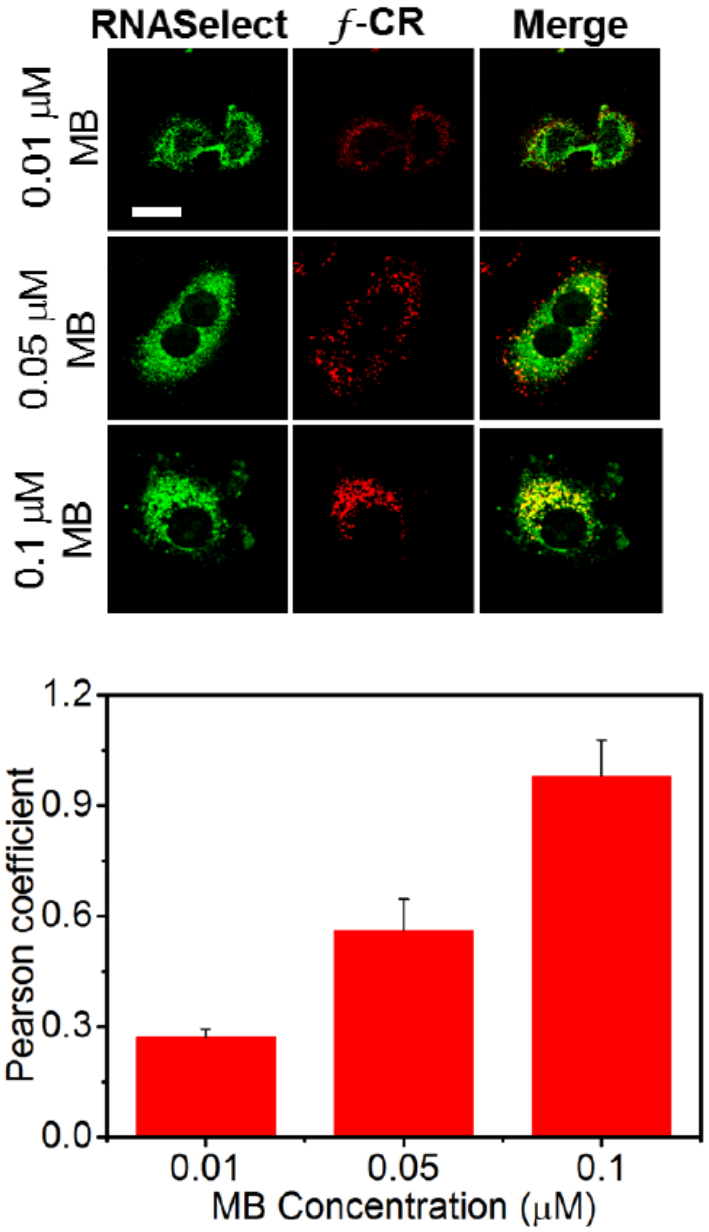
Figure S21. The PAGE gels of total proteins of 4T1 cells under Coomassie blue (left) and Cy 7 (right).

探究f-CR对癌细胞的靶向能力

αvβ3低水平表达整联蛋白的乳腺癌细胞

αvβ3过度表达的乳腺癌细胞





f-CR在体内滞留情况

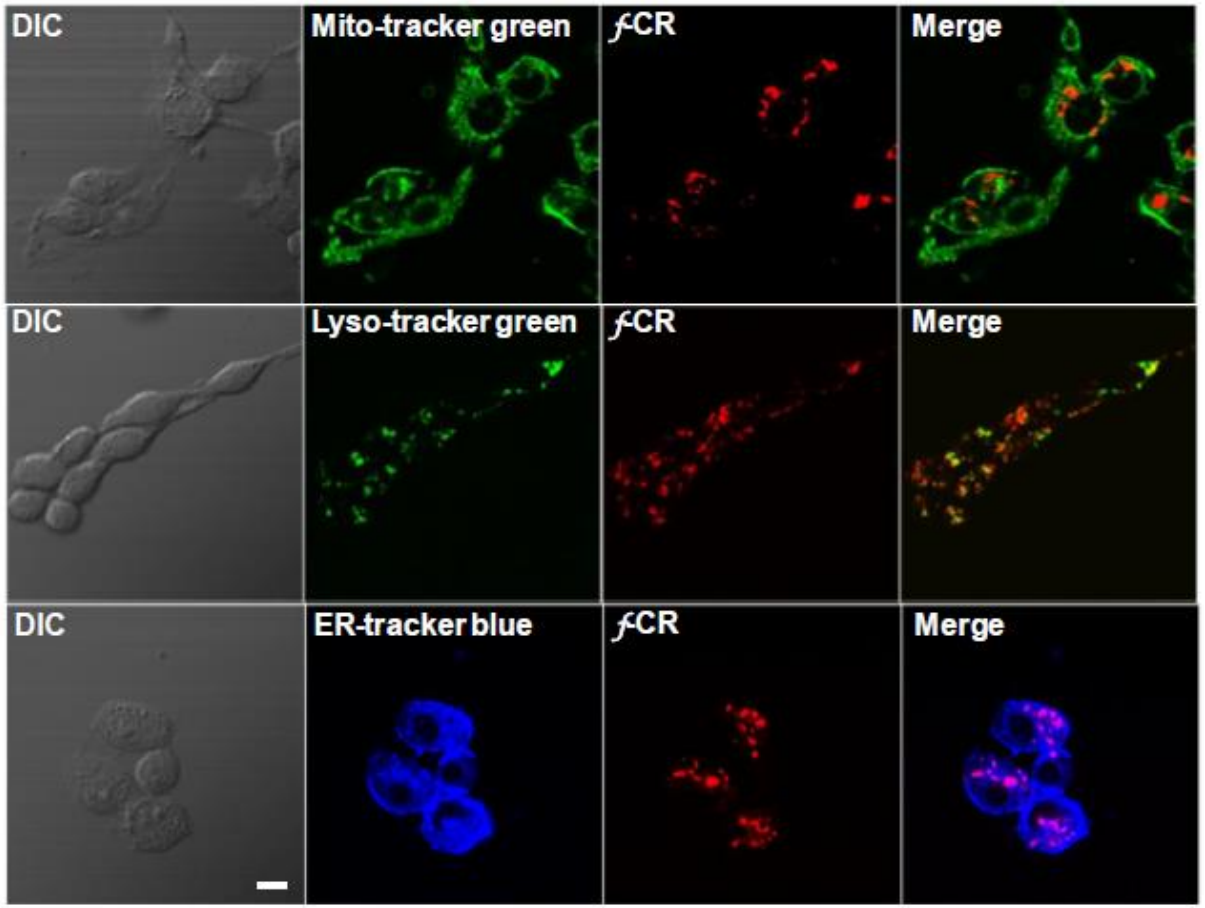
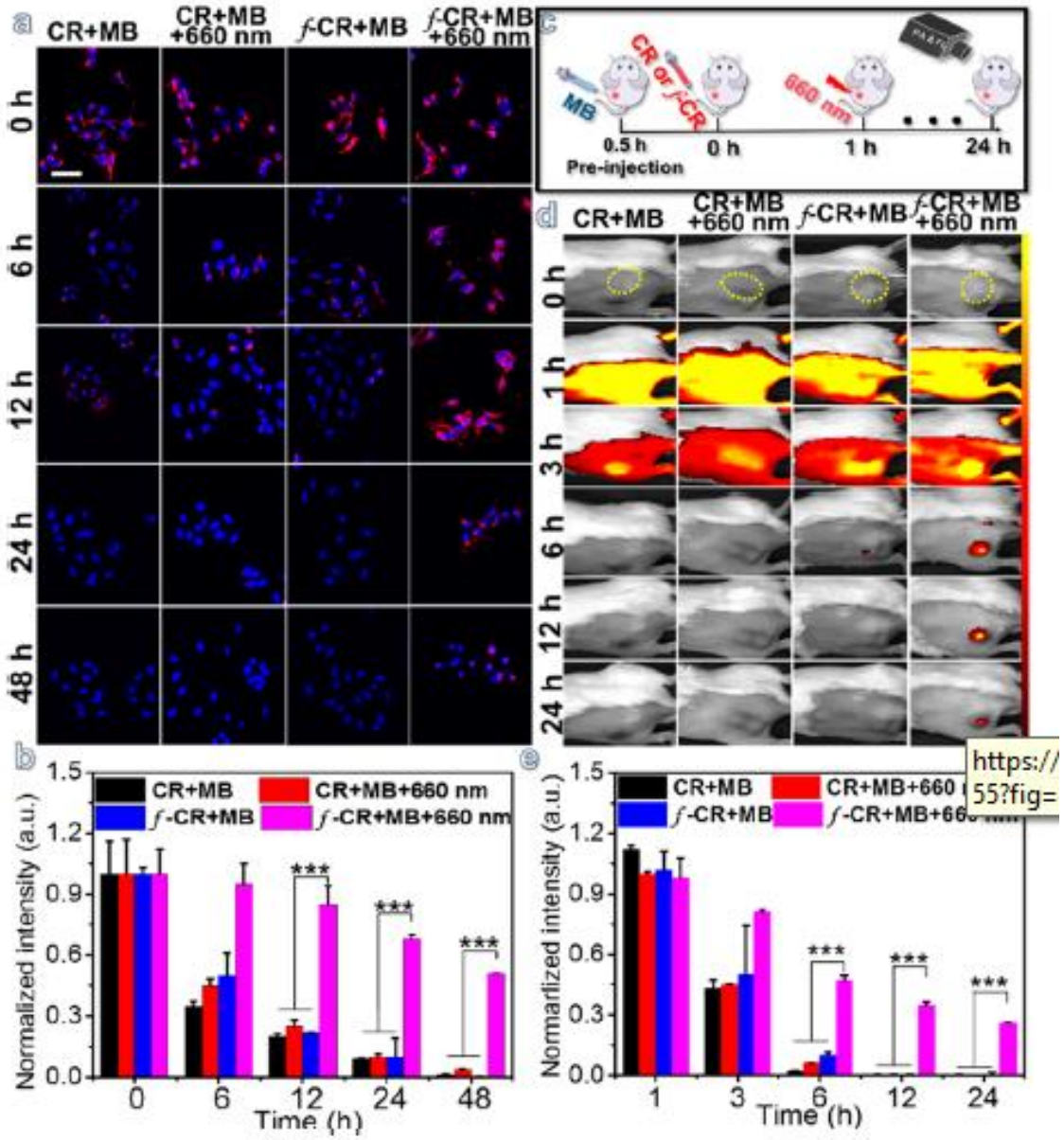
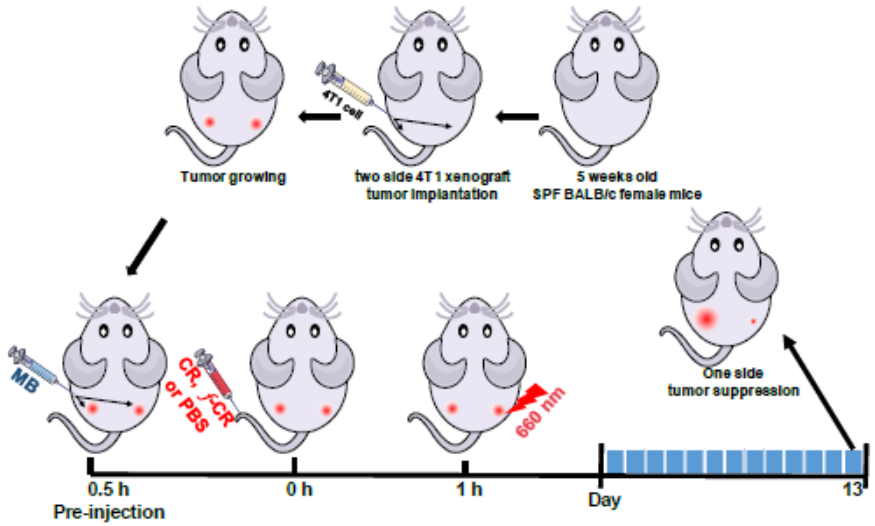


Figure S17. CLSM images of 4T1 cell incubated with *f*-CR (20 μM) for 6 h and stained by Mito-tracker green, Lyso-tracker green and ER-tracker blue, respectively. Scale bar: 10 μm.



f-CR的体内肿瘤抑制性能



Scheme S3. Schematic illustration of the tumor suppression caused by the probe-RNA crosslinking.

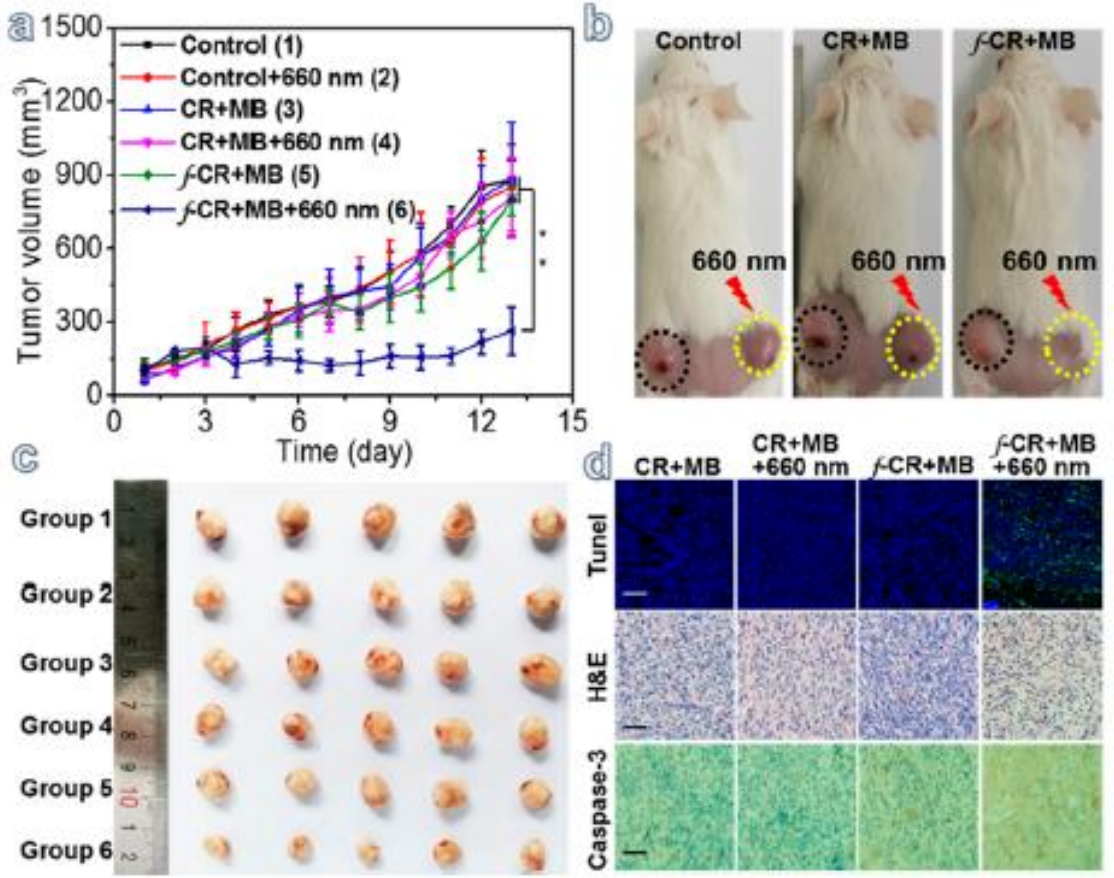


Figure 6. In vivo evaluation of the tumor suppression. (a) Tumor growth profiles of the mice treated to PBS (control), CR or *f*-CR in the presence of MB (0.1 μM, 50 μL) with or without 660 nm light irradiation (50 mW/cm^2, 3 min), the mice photos at day 13 (b), and tumor photos (c). (e) Tunnel staining, H&E and caspase 3 staining images of tumorous tissues treated with CR or *f*-CR (500 μM, 200 μL) in the presence MB (0.1 μM, 50 mL) with or without 660 nm light irradiation (50 mW/cm^2, 3 min; scale bar = 50 μm). The statistical significance level is $^{**}p < 0.01$.

Thanks!