## Supporting information

GE11 peptide-decorated acidity-responsive micelles for improved drug delivery and enhanced combination therapy of metastatic breast cancer

Zhihao Guo ${ }^{\text {ab,b, }, 1^{*}}$, Junhui Suib,d,1, Yumei Lia $^{\text {a }}$, Qinchuan Wei ${ }^{\text {a }}$, Cailing Weia ${ }^{\text {a }}$, Linyun Xiu ${ }^{\text {a }}$, Ruohua Zhu ${ }^{\text {a }}$, Yong Sun ${ }^{b^{*}}$, Jianshe Huc ${ }^{\text {c }}$, Ji-Liang Lia ${ }^{\text {a, }{ }^{*}}$
${ }^{\text {a }}$ School of Biomedical Engineering, School of Ophthalmology \& Optometry, Eye Hospital, Wenzhou Medical University, 270 Xueyuan Road, Wenzhou, 325027, China.
${ }^{\mathrm{b}}$ National Engineering Research Center for Biomaterials, Sichuan University, 29 Wangjiang Road, Chengdu, 610064, China.
${ }^{\text {c }}$ Center for Molecular Science and Engineering, College of Science, Northeastern University, 3-11 Wenhua Road, Shenyang, 110819, China.
${ }^{\text {d College of Life Science and Technology, Xinxiang Medical University, } 601 \text { Jinsui Road, Xinxiang, }}$ 453003, China.
${ }^{\mathrm{e}}$ Wenzhou Institute, University of Chinese Academy of Sciences, 1 Jinlian Road, Wenzhou, 325000, China.

[^0]

Fig. S1. In vitro cytotoxicity of free DOX combination with CEL at a mass ratio of $1 / 5$ for 24 h .


Fig. S2. Relative cell viability of 4 T 1 cells after treatment with the drug-loaded micelles for 48 h .


Fig. S3. Tumor inhibiting rate calculated by tumor volume.


Fig. S4. Histopathological analysis of major organs in 4T1 tumor-bearing mice after different treatments.

Table S1. Properties of drug-loaded micelles.

| Drug-loaded micelles | Size (D. nm) | PDI | LC of DOX <br> $(\%)$ | LC of CEL <br> $(\%)$ | EE of CEL <br> $(\%)$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| GE11-DOX-M | $81.3 \pm 3.5$ | $0.21 \pm 0.03$ | 6.7 | - | - |
| DOX+CEL-M | $92.5 \pm 2.4$ | $0.18 \pm 0.02$ | 5.3 | 28.4 | 83.1 |
| GE11-DOX+CEL-M | $100.6 \pm 5.4$ | $0.16 \pm 0.03$ | 4.3 | 23.2 | 71.9 |

Table S2. In vitro cytotoxicity of drug-loaded micelles against 4T1cells for 24 h or 48 h .

| Micelles | $\mathrm{IC}_{50} / \mathrm{DOX}(\mu \mathrm{g} / \mathrm{mL})(24 \mathrm{~h})$ | $\mathrm{IC}_{50} / \mathrm{DOX}(\mu \mathrm{g} / \mathrm{mL})(48 \mathrm{~h})$ |
| :---: | :---: | :---: |
| GE11-DOX-M | $3.50 \pm 0.07$ | $0.45 \pm 0.05$ |
| DOX+CEL-M | $1.14 \pm 0.05$ | $0.26 \pm 0.06$ |
| GE11-DOX+CEL-M | $0.22 \pm 0.03$ | $0.07 \pm 0.01$ |


[^0]:    Supplementary Fig. S1-S4 and Table S1-S2

