

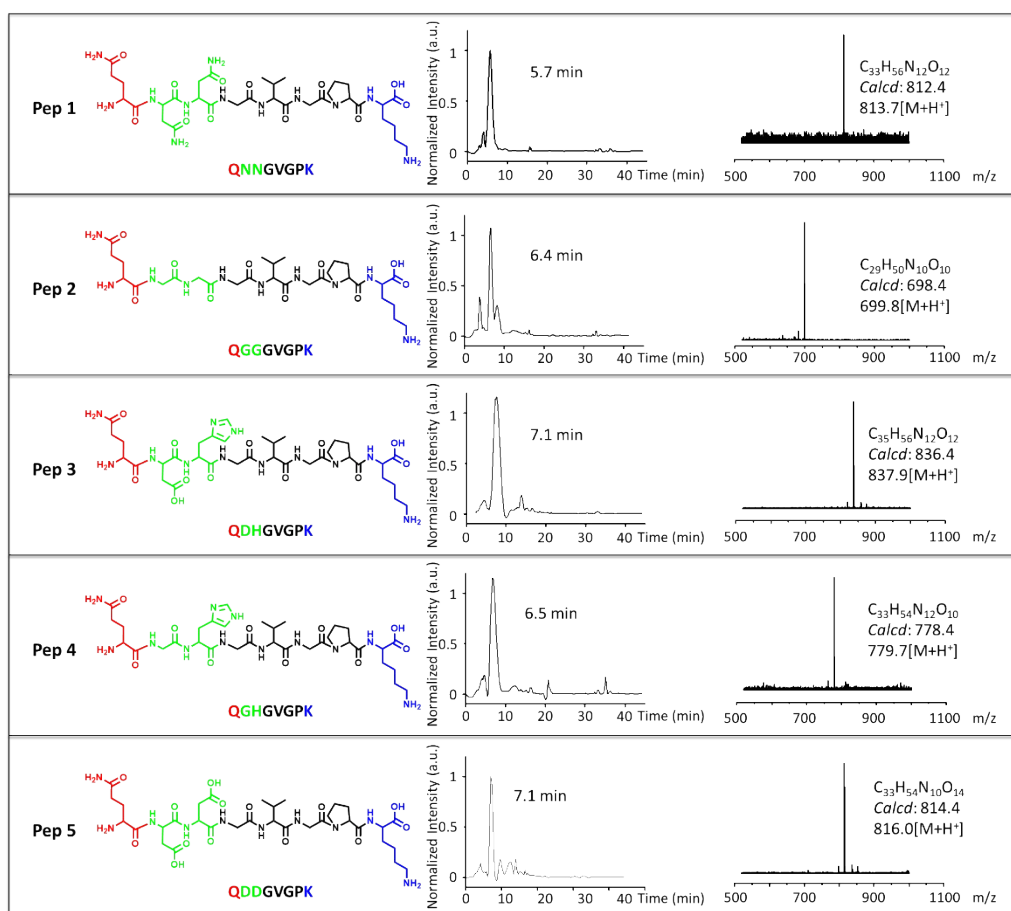
## Supporting information

### **Intracellular transglutaminase-catalyzed polymerization and assembly for bioimaging of hypoxic neuroblastoma cells**

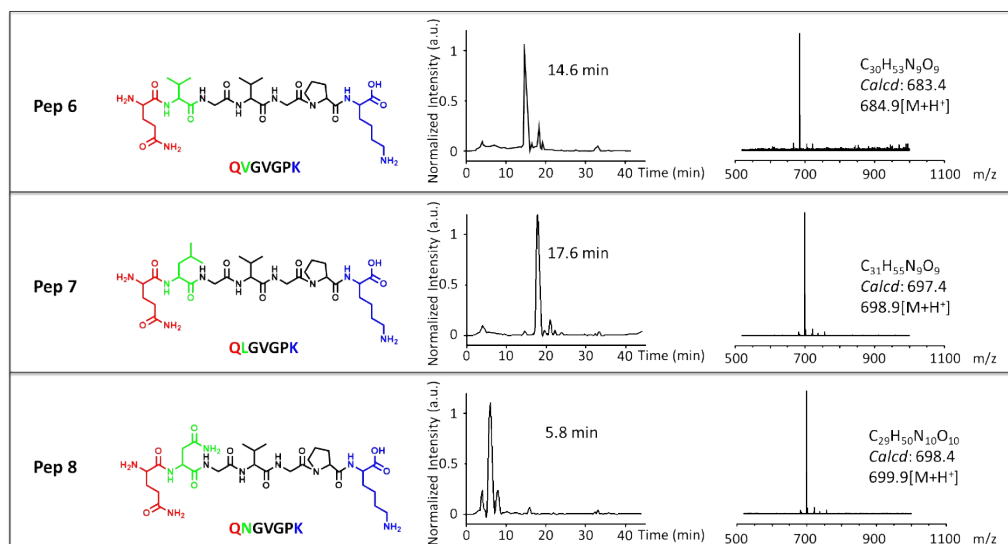
Bo Peng<sup>bc</sup>, Xiao Zhao<sup>a</sup>, Miao-Sen Yang<sup>\*a</sup>, Li-Li Li<sup>\*b</sup>

- a. School of Chemical Engineering, Northeast Electric Power University, Jilin (China)
- b. Laboratory for Biological Effects of Nanomaterials and Nanosafety, National Center for Nanoscience and Technology, No. 11 Beiyitiao, Zhongguancun, Beijing (China)
- c. College of Materials Science and Opto-Electronic Technology, University of Chinese Academy of Sciences, Beijing (China)

E-mail of Corresponding authors: [lill@nanoctr.cn](mailto:lill@nanoctr.cn); [ymiaosen@163.com](mailto:ymiaosen@163.com)

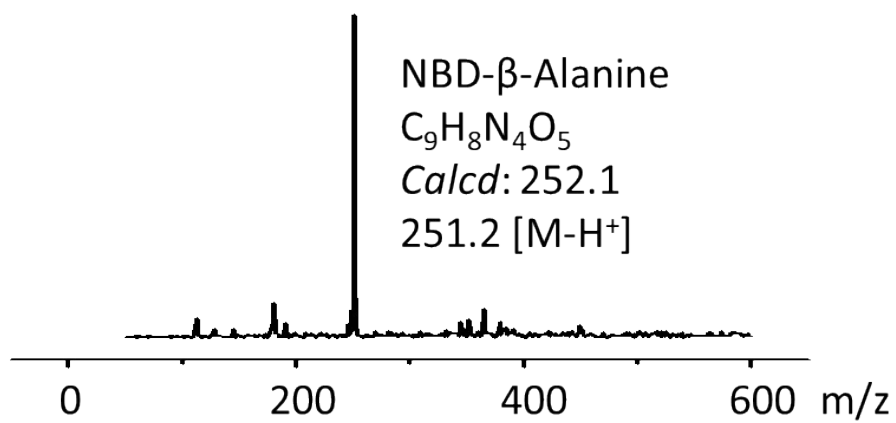
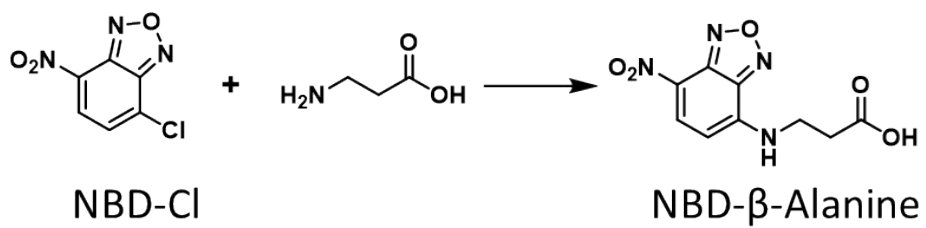


**Fig. S1.** The chemical structure of monomeric peptide and its MALDI-TOF and HPLC in series 1.



**Fig. S2.** The chemical structure of monomeric peptide and its MALDI-TOF and HPLC in series 2.





**Fig. S4.** The synthesis route of NBD-β-Alanine and its MALDI-TOF.

NBD-Pep 9

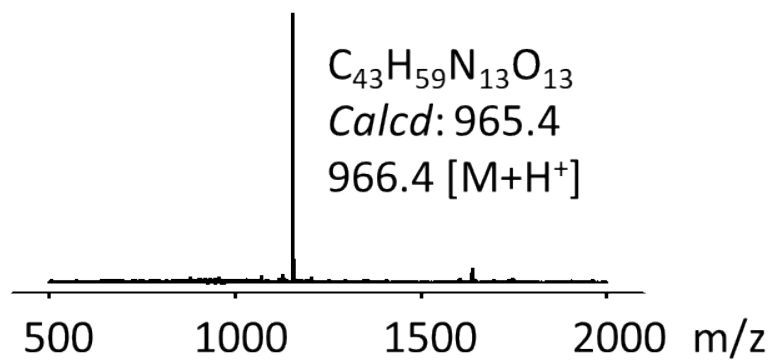
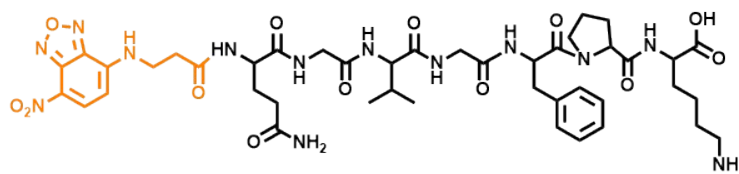
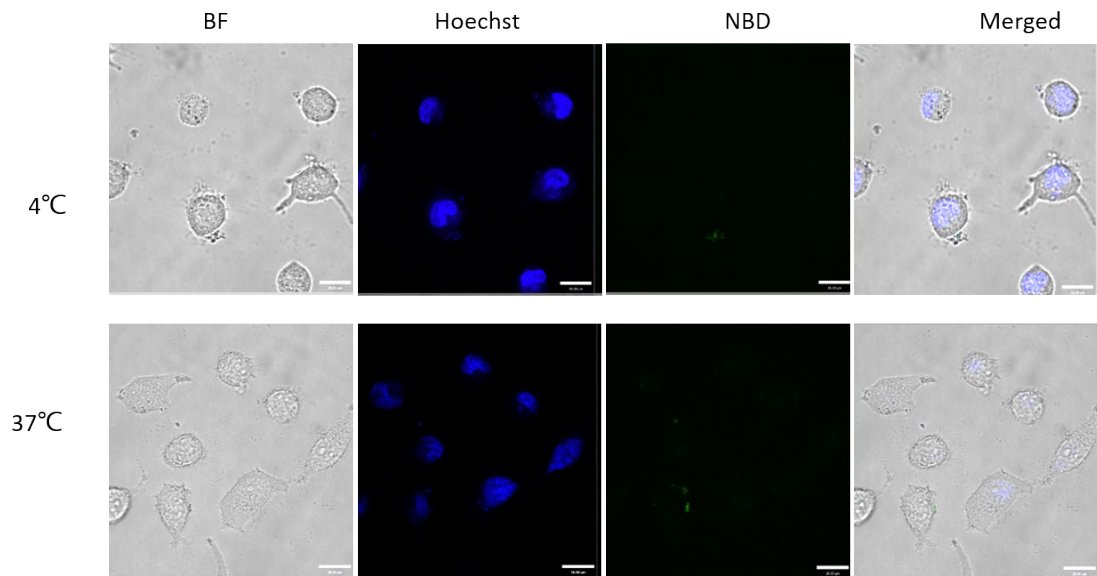
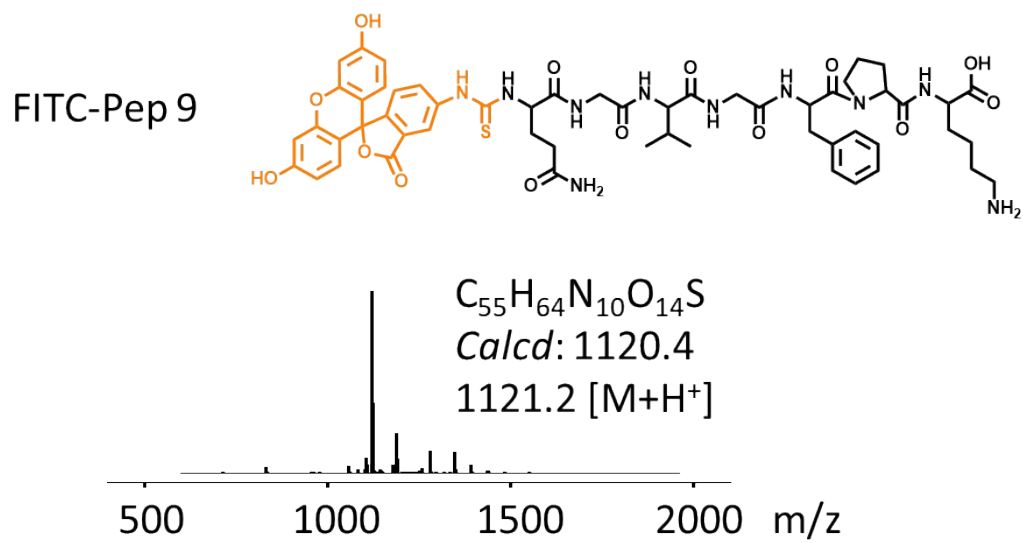


Fig. S5. The chemical structure of NBD-Pep 9 and its MALDI-TOF.

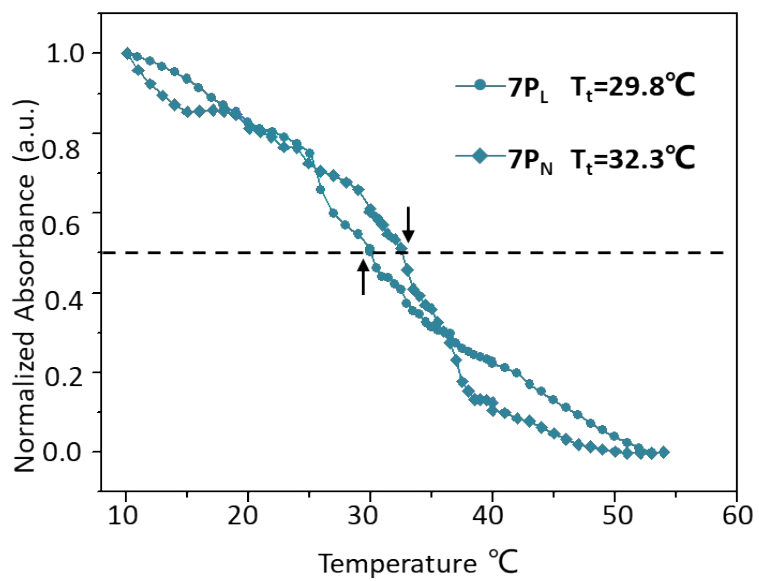


**Fig. S6.** Intracellular polymerization and self-assembly. NBD-Pep 9 was incubated with MCF-7 cells for fluorescence imaging at 37 °C and 4 °C. NBD-7PF', green; nucleus, blue. Scale bar, 20  $\mu$ m.

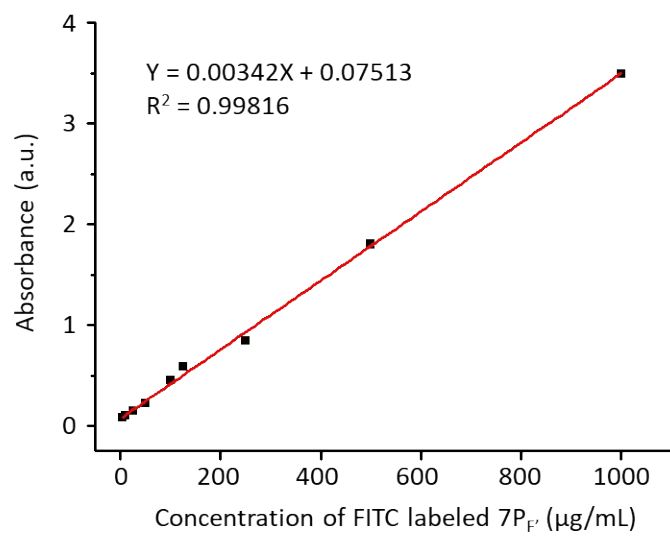


**Fig. S7.** The chemical structure of FITC-Pep 9 and its MALDI-TOF.

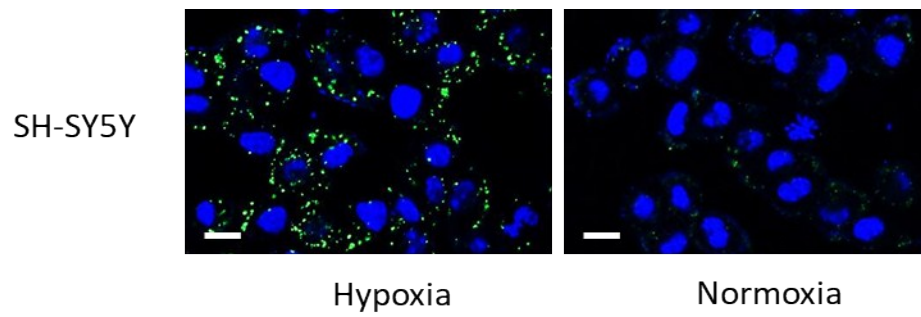




**Fig. S8.** Transition temperatures (T<sub>t</sub>) of ELPs of 7P<sub>L</sub> and 7P<sub>N</sub>.



**Fig. S9.** The standard curve of FITC labeled 7P<sub>F</sub> at 491 nm.



**Fig. S10.** Fluorescence images for SH-SY5Y cells in hypoxia or normoxia. SH-SY5Y cells were incubated with FITC-Pep 9 for 12 h, then continued incubation with peptide-free media for 12 h. Images were taken at 4 °C. FITC-7P<sub>F</sub>, green; nucleus, blue. Scale bar, 20 μm.

**Table. S1.** The Characterization of peptide monomers and their corresponding polymerized ELPs under different ratios of peptide substrate and TG2.

<b>Substrate:TG2 (mg/mL: mg/mL)</b>	<b>ELPs M<sub>w</sub></b>	<b>Number of repeat unit</b>
1:1	10100	13-14
3:1	12000	16-17
5:1	15600	21-22
6:1	19100	25-26
7:1	19100	25-26