## **Supporting Information**

Peptide functionalized upconversion/NIR II luminescence nanoparticles for targeted imaging and therapy of oral squamous cell carcinoma

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Fig. S1 The element mapping of UCA (up) and UCA-cMBP (down).



**Fig. S2.** UCL spectra and the NIR II imaging (YOF:Yb,Er and YOF:Yb,Er@Y,Nd) photographs of UCA phosphor and with water quenched.



Fig. S3. XRD pattern and the corresponding JCPDS card of YOF:Yb,Er.



Fig. S4. XRD pattern and the corresponding JCPDS card of YOF:Yb,Er@YOF:Nd.



**Fig. S5** The absolute quantum yield calculations of UCA (left) and UCA-cMBP (right). The absorption spectra (by diffuse reflectance detection with integrating spheres) at the excitation wavelength of 980 nm and emission spectra in the visible region.



Fig. S6 The samples of (A) RENP and (B) UCA, UCA-cMBP in different physiological solutions.



**Fig. S7** The confocal images of Cal27 cells co-incubated with UCNP-cMBP at different time points.



Fig. S8 Cal27 cells co-incubated with different concentrations of UCA and marked with JC-1.



**Fig. S9** Cal27 cells co-incubated with different concentrations of cMBP and marked with JC-1.



**Fig. S10** The NIR II imaging photograph to micro TSCC tumor after intravenously injected with UCA-cMEI with different time points.



**Fig. S11** The blank group as the control. (A) Fluorescence imaging photographs and (B) NIR II imaging photographs of mice organs without injection.



**Fig. S12** The fluorescence imaging photographs of UCA-cMBP samples (two same samples in the separate tubes) under different excitation and emission wavelengths.