## Thermoresponsive elastin-*b*-collagen-like peptide bioconjugate nanovesicles for targeted drug delivery to collagen-containing matrices

Supporting Information

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Figure S1. Schematic illustration of fluorescein loading and release from ELP-CLP vesicles.



Figure S2. Schematic illustration of the retention of FELP-CLP vesicles on type II collagen films.



Figure S3. a) Size distribution of ELP-CLP assemblies at 37 °C analyzed via ImageJ. b) Size distribution of fluorescein-loaded ELP-CLP assemblies at 37 °C analyzed via ImageJ. c) Overlay of ImageJ particle size distribution (dotted line) and DLS results (solid line) for ELP-CLP assemblies. d) Overlay of ImageJ particle size distribution (dotted line) and DLS results (solid line) for fluorescein-loaded ELP-CLP assemblies.



Figure S4. First order fit of the ELP-CLP cargo release profile in the first 8 hours.



Figure S5. Cumulative release of fluorescein from ELP-CLP vesicles at physiological temperature as a function of time over a 6-week period.



Figure S6. Dynamic light scattering characterization of the assembly of fluorescein labeled ELP–CLP conjugates. Hydrodynamic diameter of nanostructures (solid spheres) and derived count rate of the scattering light (hollow spheres) were plotted as a function of temperature upon heating. N = 3.



Figure S7. Normalized metabolic activity of RAW264.7 macrophages cultured with ELP-CLP vesicles at various concentrations, calculated via fluorescence measurement of the overall reductive capability of the cells. The data was normalized with the results from cells in culture medium without the vesicles. N = 3.



Figure S8. NIH-3T3 fibroblast viability after 24-hour incubation with the ELP-CLP vesicles. All images are with a 10x objective. Scale bars =  $100 \mu m$ .



Figure S9. Representative images of ATDC5 cell viability via live (green fluorescence)/dead (red fluorescence) assay. a, b) Control sample without the addition of ELP-CLP vesicles at 24 h and 72 h, respectively. c, d) Cells cultured with the addition of 1000  $\mu$ g/mL ELP-CLP vesicles at 24 h and 72 h, respectively. Scale bar = 200  $\mu$ m and applies to all images.



Figure S10. Cell area coverage following application of 0, 50, 150, 500, and 1000  $\mu$ g/mL of ELP-CLP vesicles. N = 3 - 5.