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Supporting Information

Gradient Release of Cardiac Morphogen by Photo-responsive Polymer Micelles for Gradient-mediated Variation of Embryoid Body Differentiation

*Mukesh K. Gupta[1], Daniel A. Balikov[1], Yunki Lee[1], Edward Ko[1], Christopher Yu[1], Young Wook Chun[1,2], Douglas B. Sawyer[3], Won Shik Kim[4], Hak-Joon Sung[1,2,5,]**

[1]Department of Biomedical Engineering, Vanderbilt University, Nashville, TN, USA.

[2]Division of Cardiovascular Medicine, Vanderbilt University Medical Center, TN, USA.

[3]Maine Medical Center and MaineHealth, ME, USA.

[4]Department of Otorhinolaryngology, College of Medicine, Yonsei University, Seoul, Republic of Korea.

[5]Severance Biomedical Science Institute, College of Medicine, Yonsei University, Seoul, Republic of Korea.

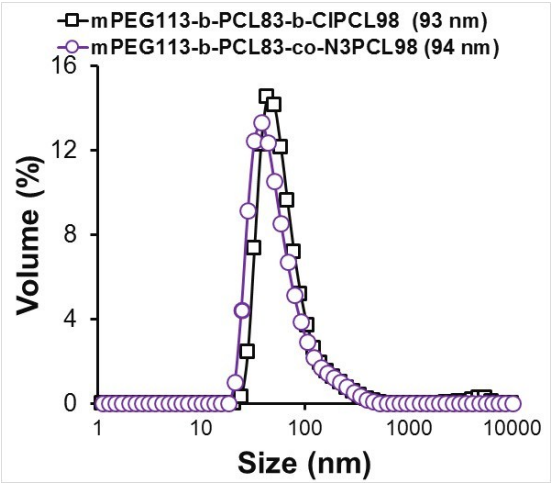

Figure S1. DLS-based size measurement of $mPEG_{113}$-*b*-PCL_{83}-*co*-$ClPCL_{98}$ and $mPEG_{113}$-*b*-PCL_{83}-*co*-N_3PCL_{98} micelles at 0.2 mg/mL in DPBS (pH 7.4).

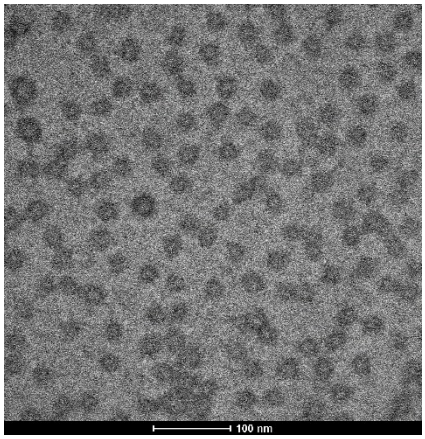

Figure S2. TEM images of $mPEG_{113}$-b-PCL_{83}-co-N_3PCL_{98}-g-ONB-RA micelles at 1 mg/mL concentration (DPBS, pH 7.4, 25 °C).

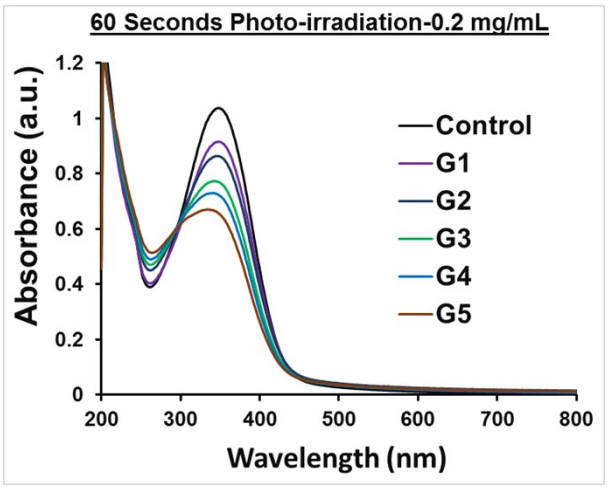

Figure S3. UV absorption spectra of $mPEG_{113}$-b-PCL_{83}-co-N_3PCL_{98}-g-ONB-RA micelles at 0.2 mg/mL before and after gradient-mediated exposure to UV light. A decrease in absorption for a specified gradient column compared to control was used for calculating the amount of RA released from polymer micelles.

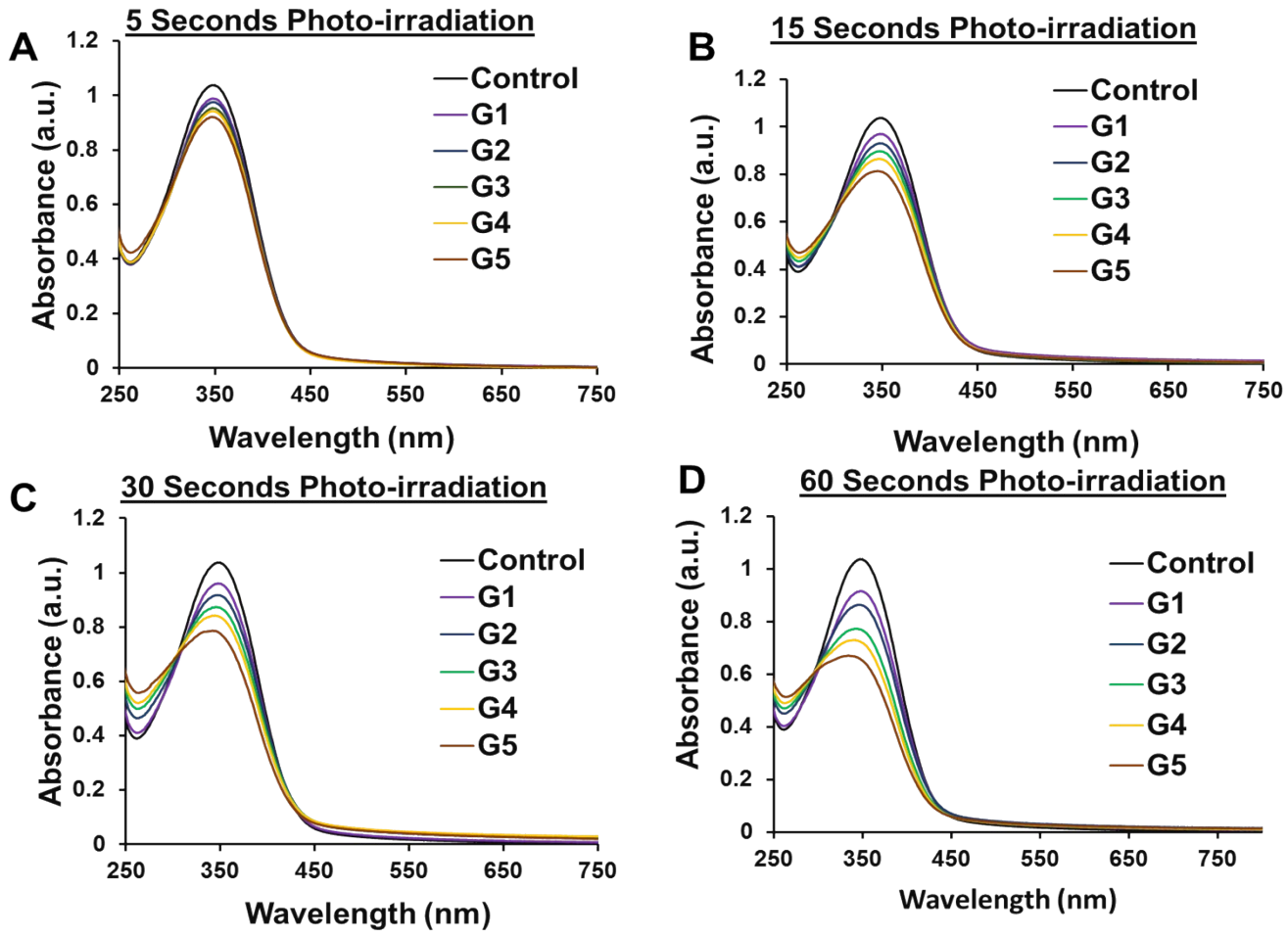

Figure S4. UV absorption spectra of $mPEG_{113}$-b-PCL_{83}-co-N_3PCL_{98}-g-ONB-RA micelles for time-dependent release of retinoic acid (0.2 mg/mL in DPBS, pH 7.4, 25 °C) through the photo-gradient. The gradient-mediated release data at **(A)** 5, **(B)** 15, **(C)** 30, and **(D)** 60 second time points demonstrate light intensity-dependent RA release from the polymer micelles.

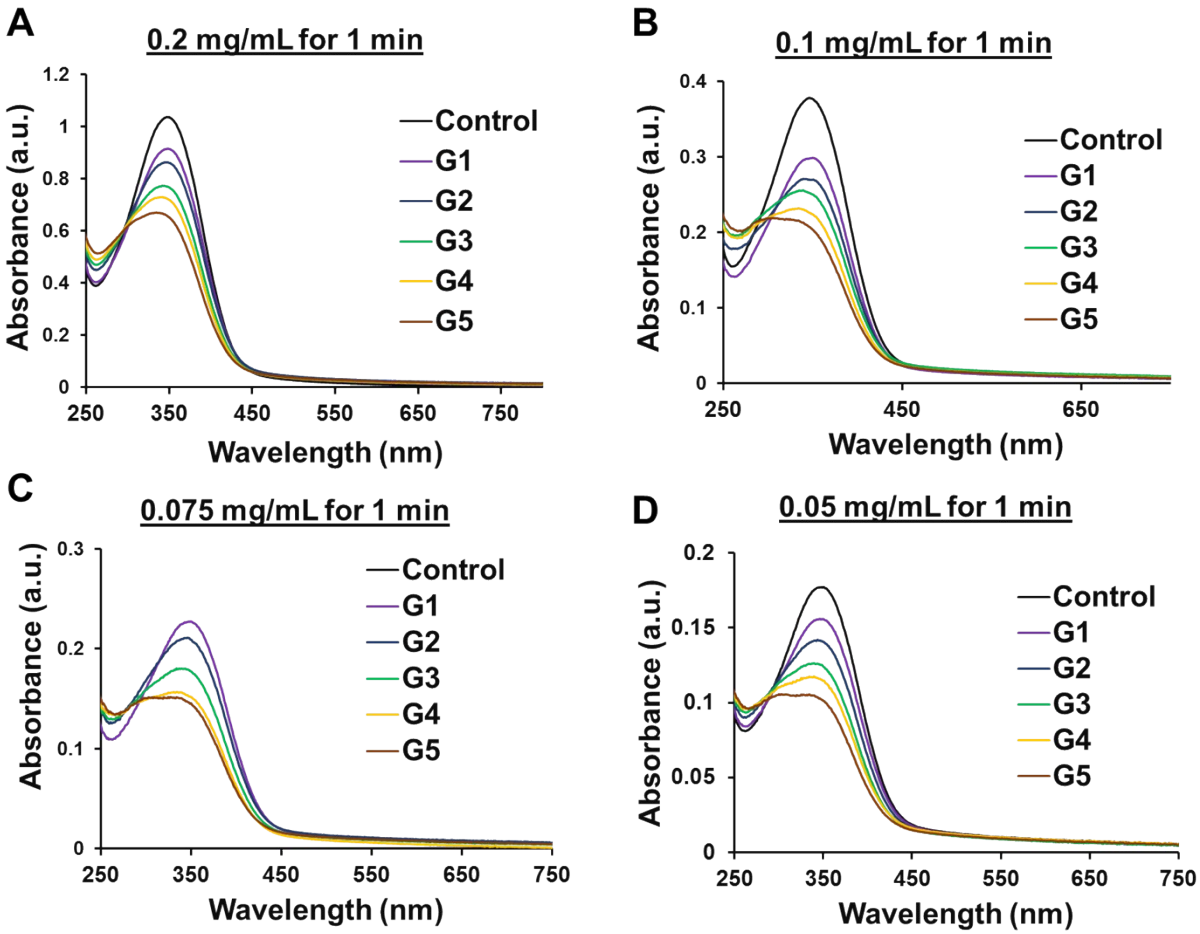

Figure S5. UV absorption spectra of $mPEG_{113}$-b-PCL_{83}-co-N_3PCL_{98}-g-ONB-RA micelles for concentration-dependent release of retinoic acid after 1 min photo-irradiation. Release of RA from polymer micelles at **(A)** 0.2, **(B)** 0.1, **(C)** 0.075, and **(D)** 0.05 mg/mL concentrations. All release conditions showed a similar RA release pattern that was dependent on light intensity passing through the photo-gradient.

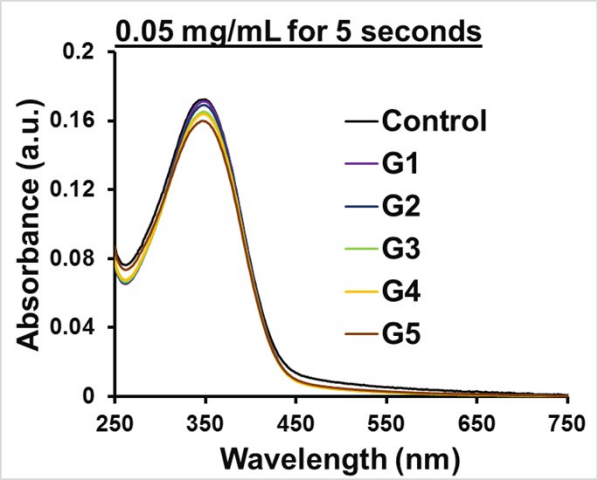

Figure S6. UV absorption spectra of $mPEG_{113}$-b-PCL_{83}-co-N_3PCL_{98}-g-ONB-RA micelles (0.05 mg/mL) before and after photo-gradient-mediated exposure for 5 seconds.