

Supporting Information

Sustainable and Degradable Epoxy Resins from Trehalose, Cyclodextrin, and Soybean Oil Yield Tunable Mechanical Performance and Cell Adhesion

Quanxuan Zhang,^{†,‡} Haley R. Phillips,[†] Anatolii Purchel,[†] Joseph K. Hexum,[†] and
Theresa M. Reineke^{†,‡,*}

[†]Department of Chemistry and [‡]Center for Sustainable Polymers, University of
Minnesota, 207 Pleasant Street SE, Minneapolis, Minnesota 55455, United States

*Email: treineke@umn.edu (T.M.R.)

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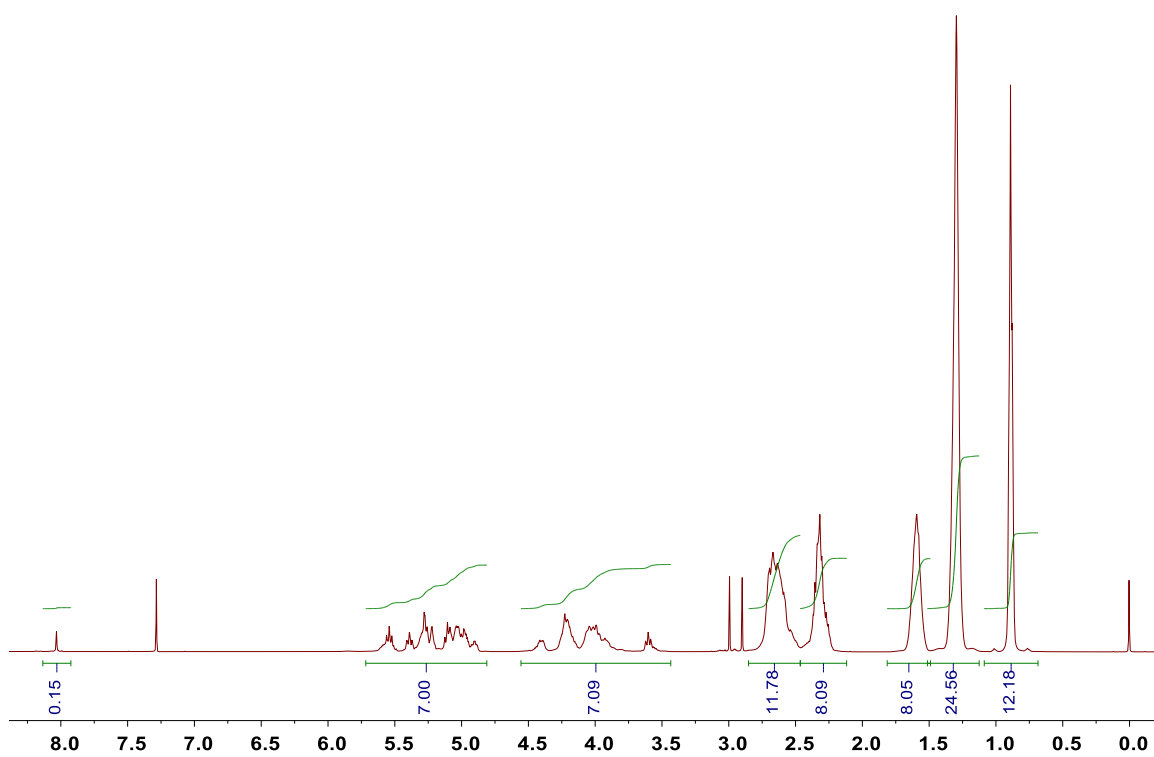


Figure S1. ^1H NMR spectrum of TrHS.

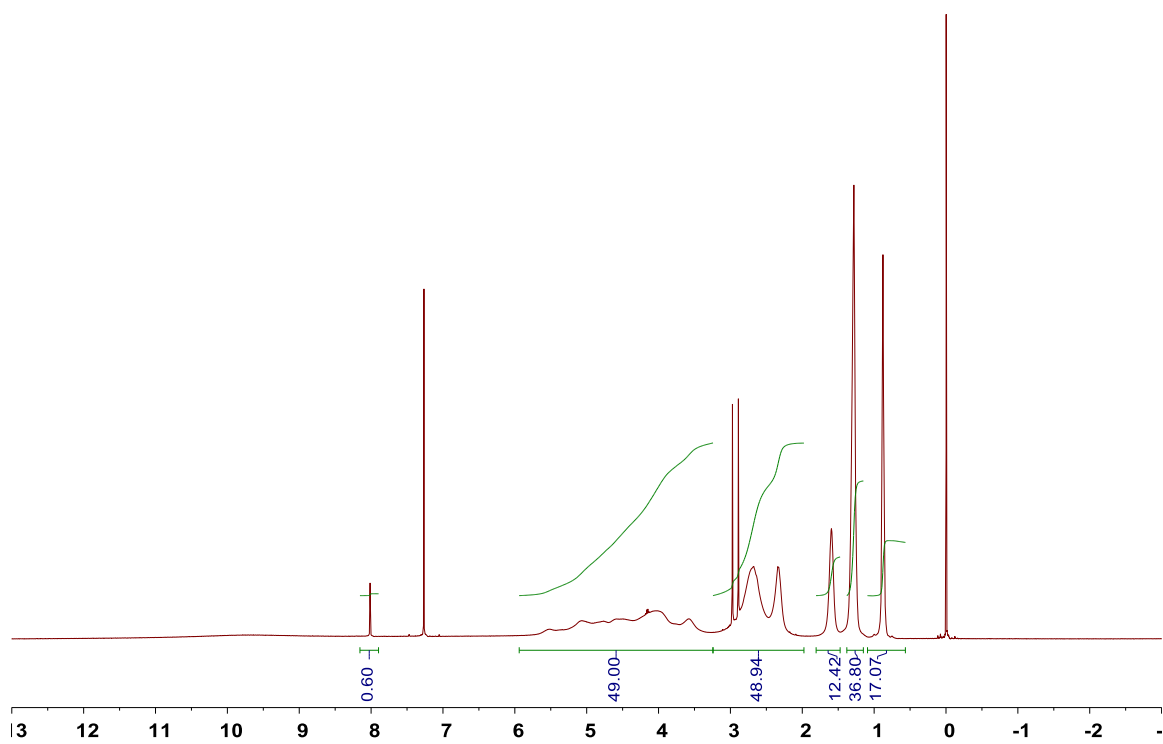


Figure S2. ^1H NMR spectrum of CdHS.

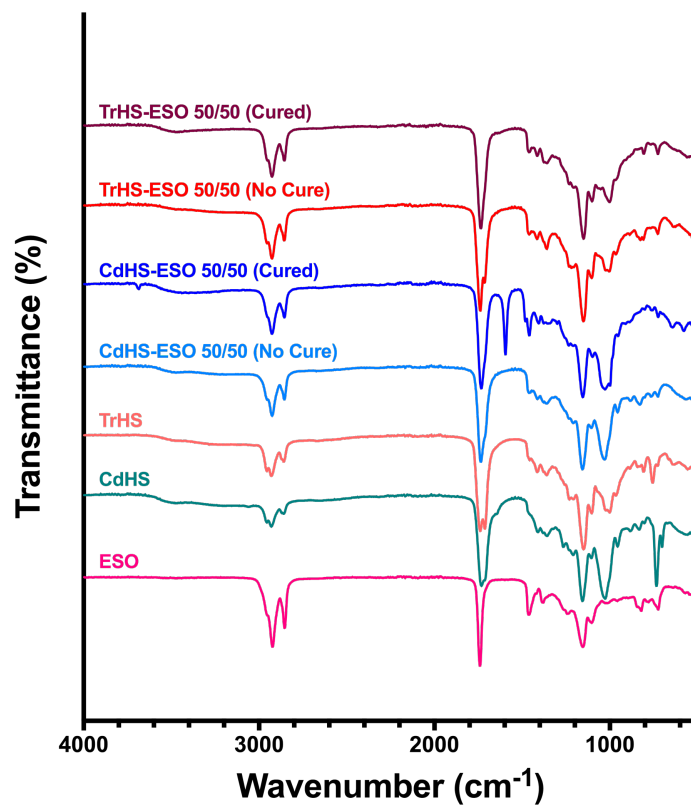


Figure S3. FT-IR spectra of TrHS, CdHS, ESO, TrHS-ESO (50/50), and CdHS-ESO (50/50) before and after cure.

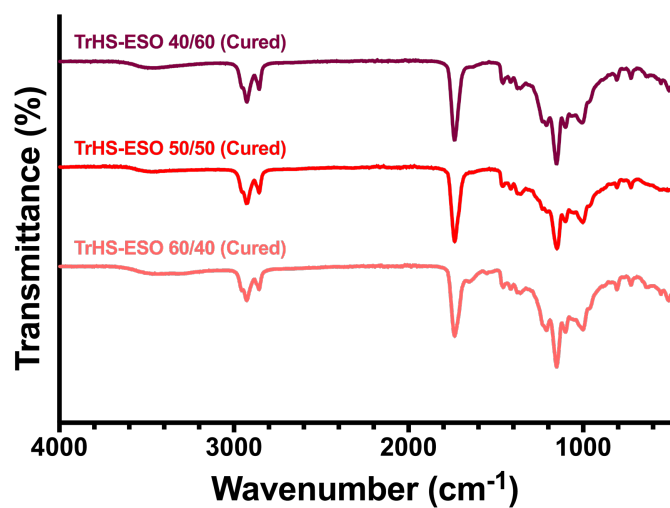


Figure S4. FT-IR spectra of cured TrHS-ESO at different ratios.

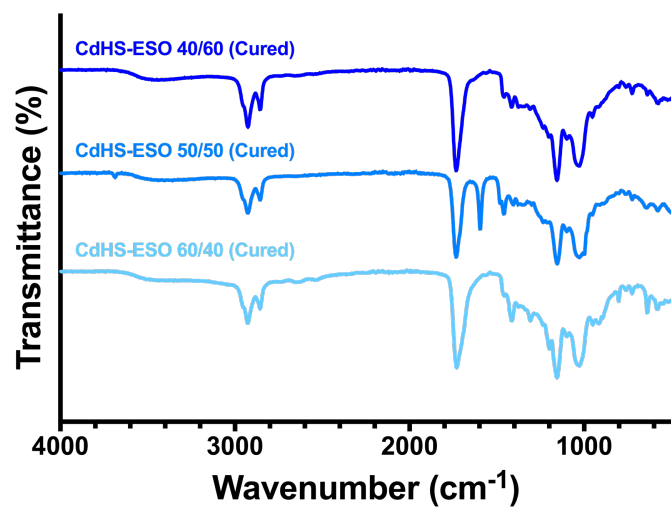


Figure S5. FT-IR spectra of cured CdHS-ESO at different ratios.

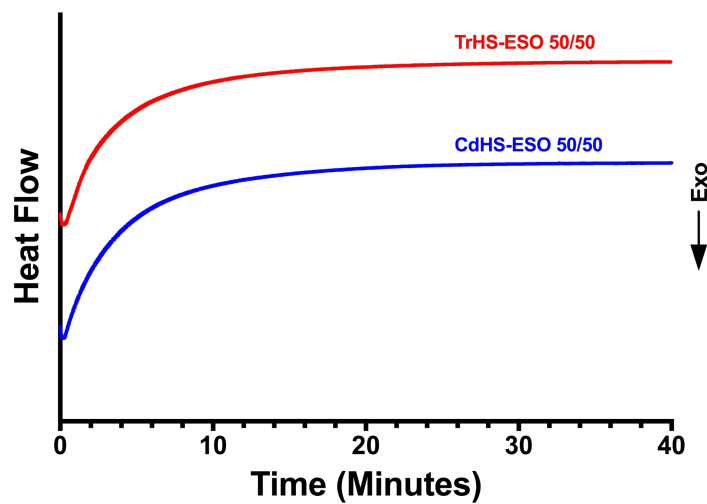


Figure S6. The isothermal DSC curves for TrHS-ESO (50/50) at 165 °C and CdHS-ESO (50/50) at 165 °C under nitrogen.

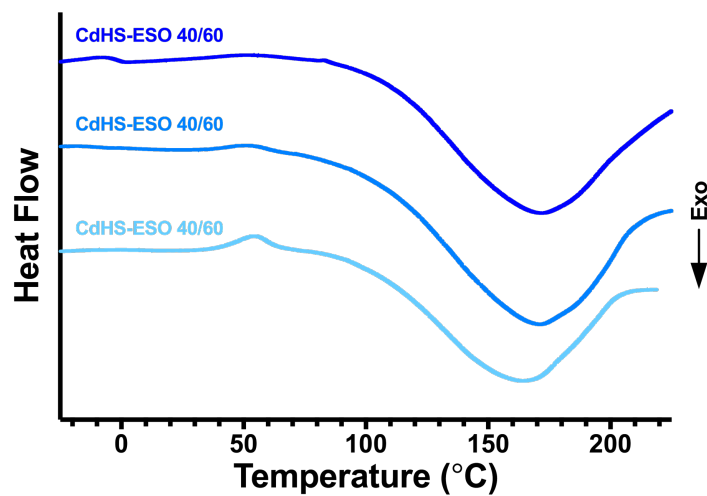


Figure S7. DSC curing thermograms of **CdHS-ESO** at different ratios under nitrogen and with a heating rate of 5 °C min⁻¹.

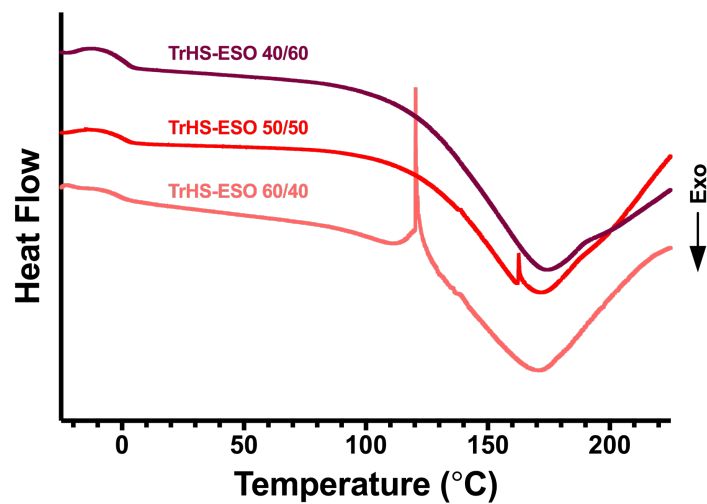


Figure S8. DSC curing thermograms of **TrHS-ESO** at different ratios under nitrogen and with a heating rate of 5 °C min⁻¹.

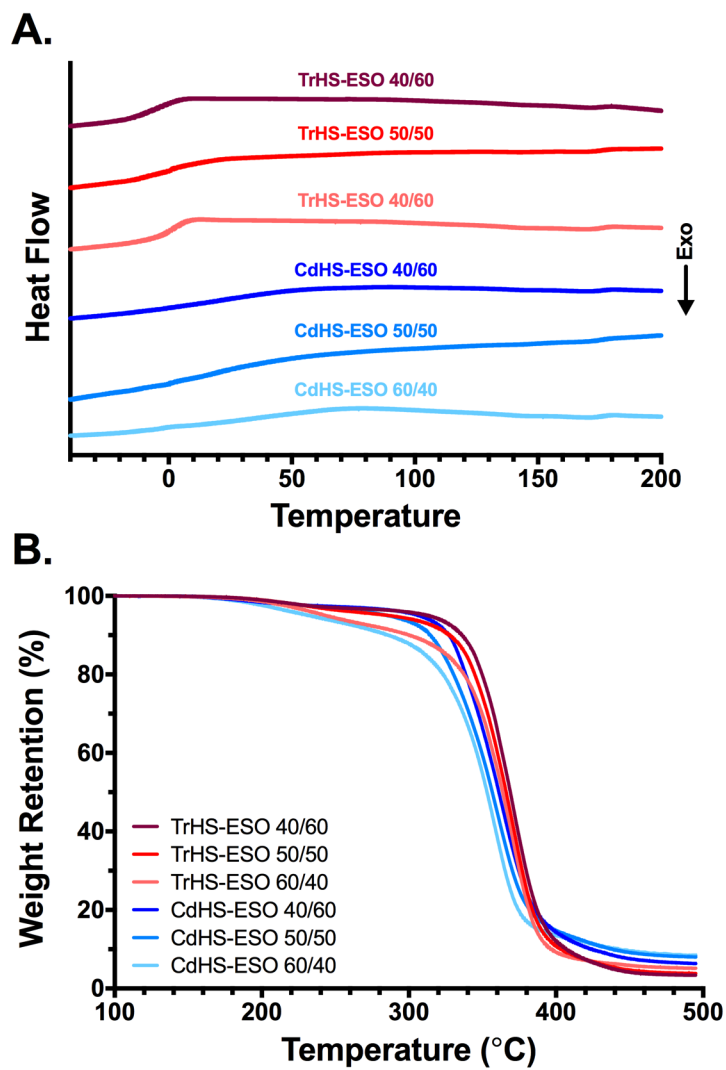


Figure S9. (A) DSC thermograms (second heating) and (B) TGA curves for cured **TrHS-ESO** and **CdHS-ESO** at different ratios with a heating rate of $10\text{ }^{\circ}\text{C min}^{-1}$ under nitrogen.

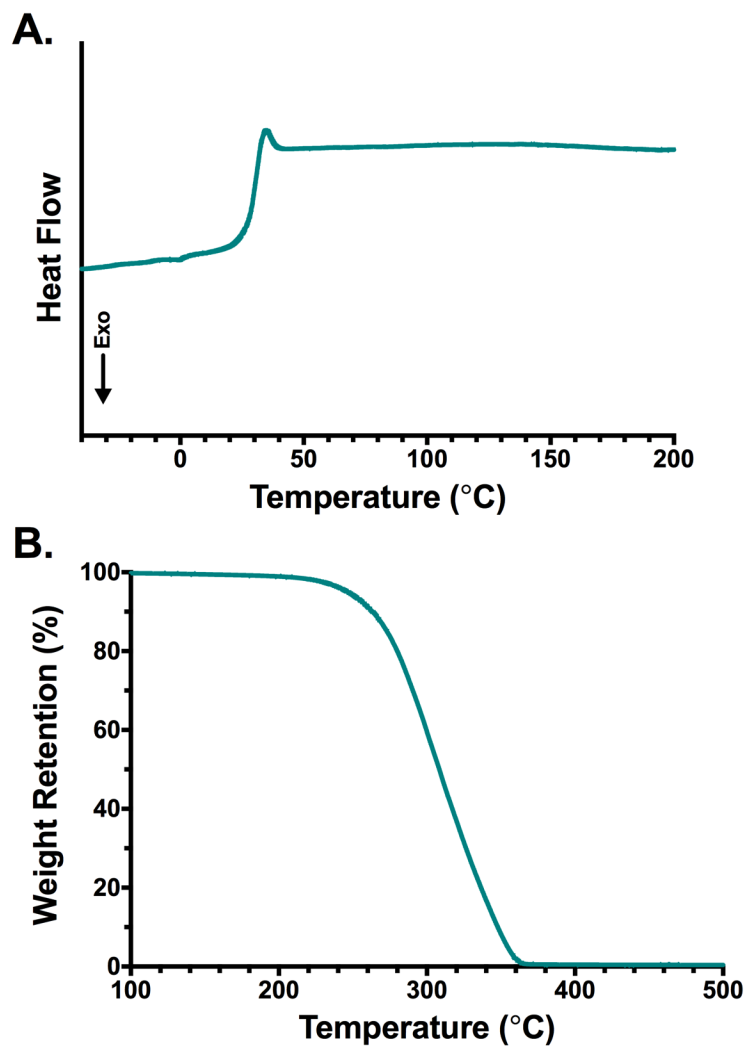


Figure S10. (A) DSC thermogram and (B) TGA curve for PLG at a ratio of 50/50 with a heating rate of 5 °C min⁻¹ under nitrogen.

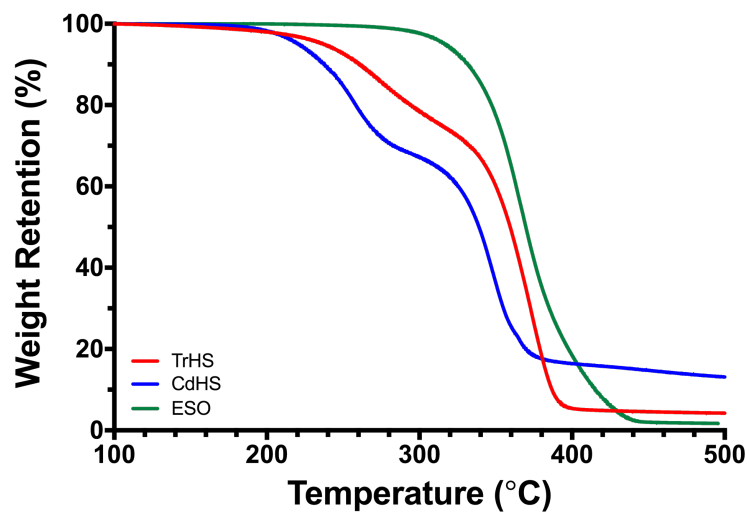


Figure S11. TGA curves for hardeners **TrHS**, **CdHS**, and **ESO** with a heating rate of $10\text{ }^{\circ}\text{C min}^{-1}$ under nitrogen.

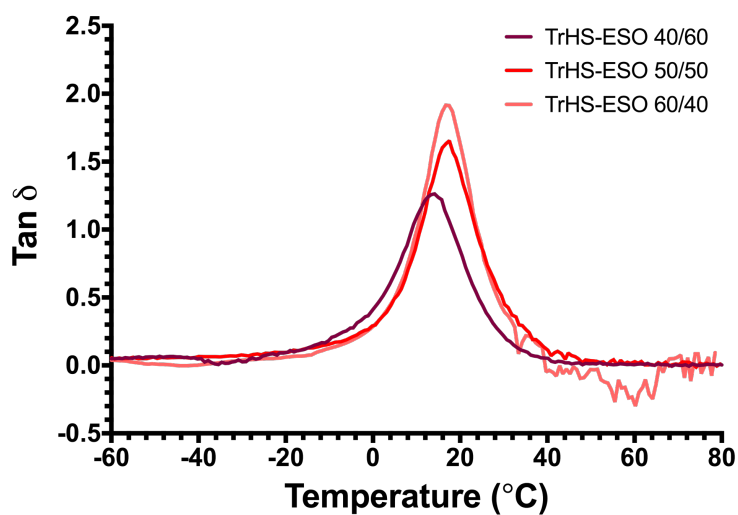


Figure S12. Tan δ curve versus temperature for cured **TrHS-ESO** at different ratios as measured by DMA.

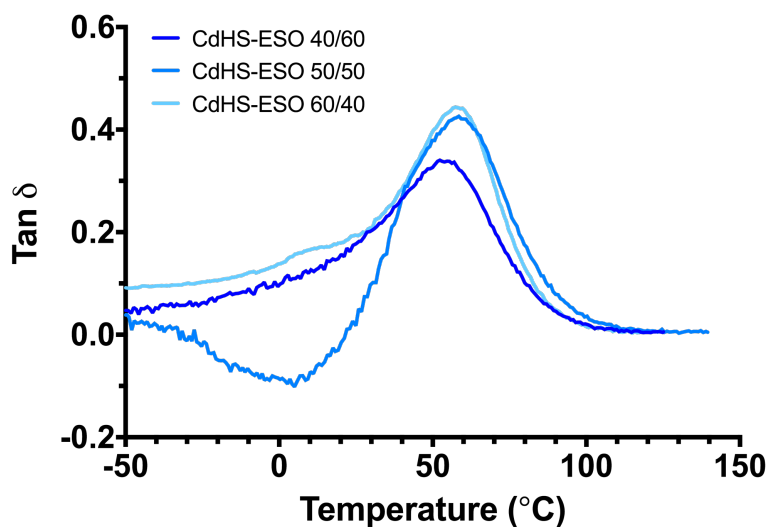


Figure S13. Tan δ curve versus temperature for cured **CdHS-ESO** at different ratios as measured by DMA.

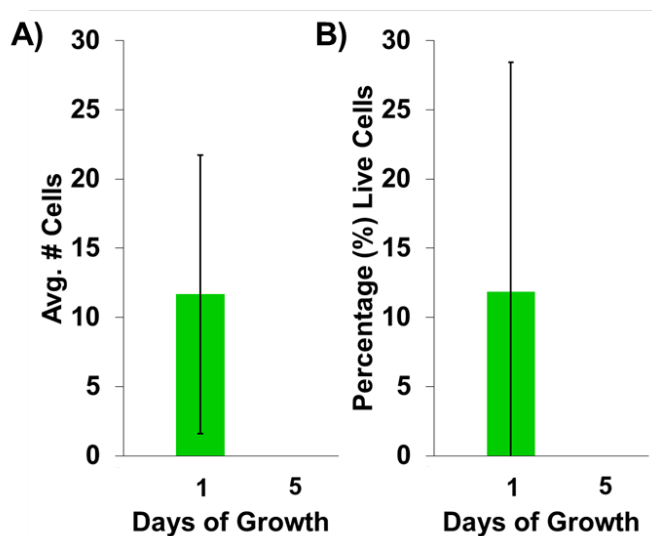


Figure S14. (A) Average number of cells and (B) the percentage of those cells that are alive (adhered to the **TrHS-ESO 50/50** film) by flow cytometry at day 1 and day 5. $N=3$ for each assay, and the error bars represent the standard deviation from the mean. No samples were statistically different ($p<0.05$) according to Student's t-test.

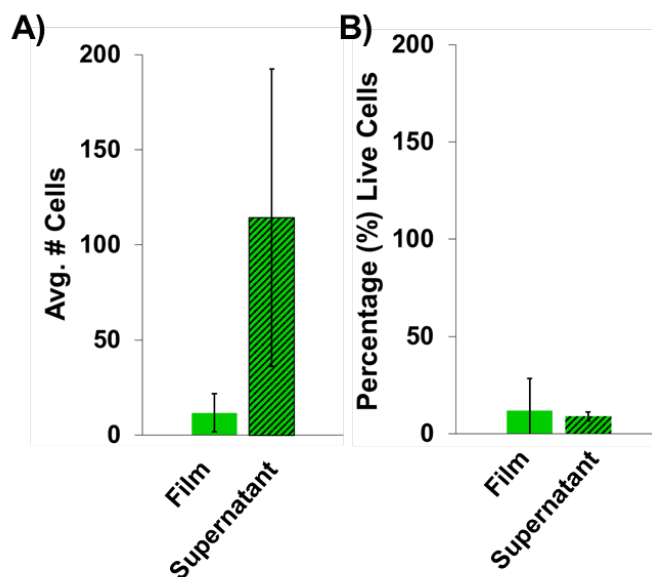


Figure S15. (A) Average number of live cells and (B) percentage of live cells adhered to the **TrHS-ESO 50/50** film and in the supernatant above the film by flow cytometry after 24 h culturing. N=3 for each assay, and the error bars represent the standard deviation from the mean. No samples were statistically different ($p < 0.05$) according to Student's t-test on the polymer film and in the supernatant after 24 h.

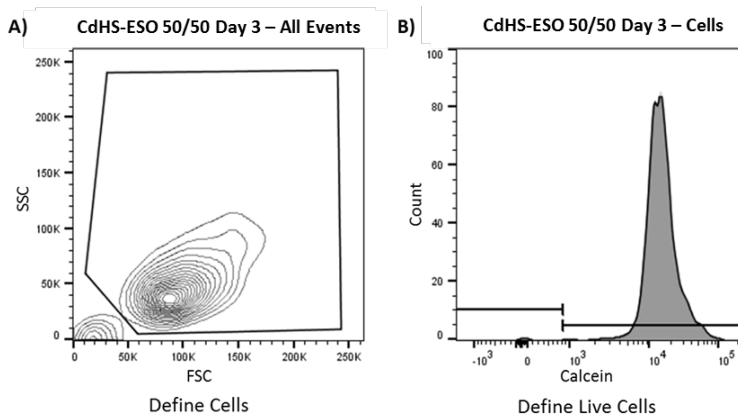


Figure S16. Gating parameters applied to all flow cytometry samples, shown using representative sample **CdHS-ESO 50/50** on day 3 of cell culture. A) Debris (low SSC and low FSC) were first gated out. B) Data from cell count gate replotted as histogram to define live cells as indicated by expression of calcein (for comparison, see dead cell samples in Figure S19 B).

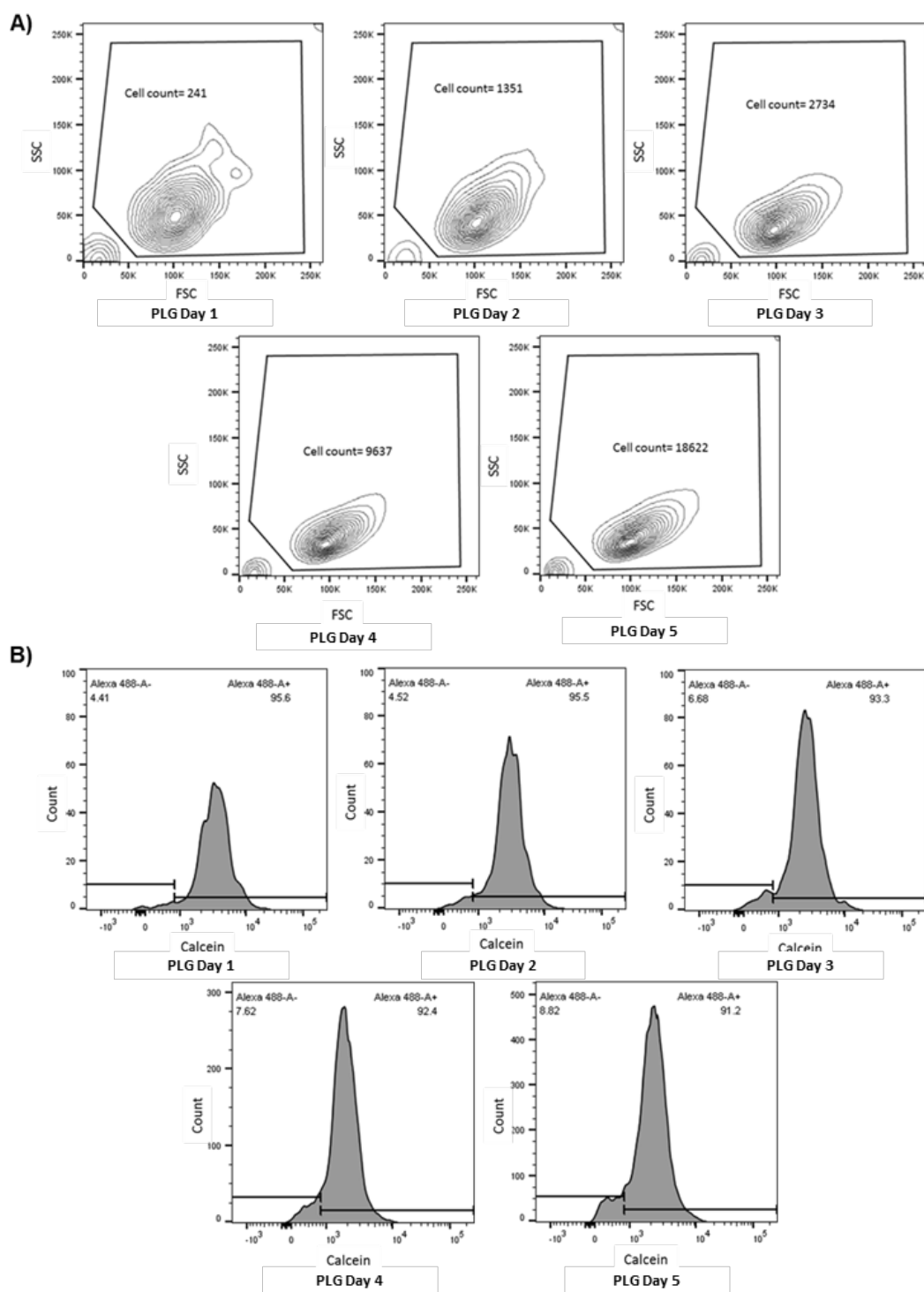


Figure S17. Representative raw flow cytometry data of cells grown on **PLG** from day 1-5. A) Total number of cells counted. B) Percentage of those cells that are alive as determined by calcein staining.

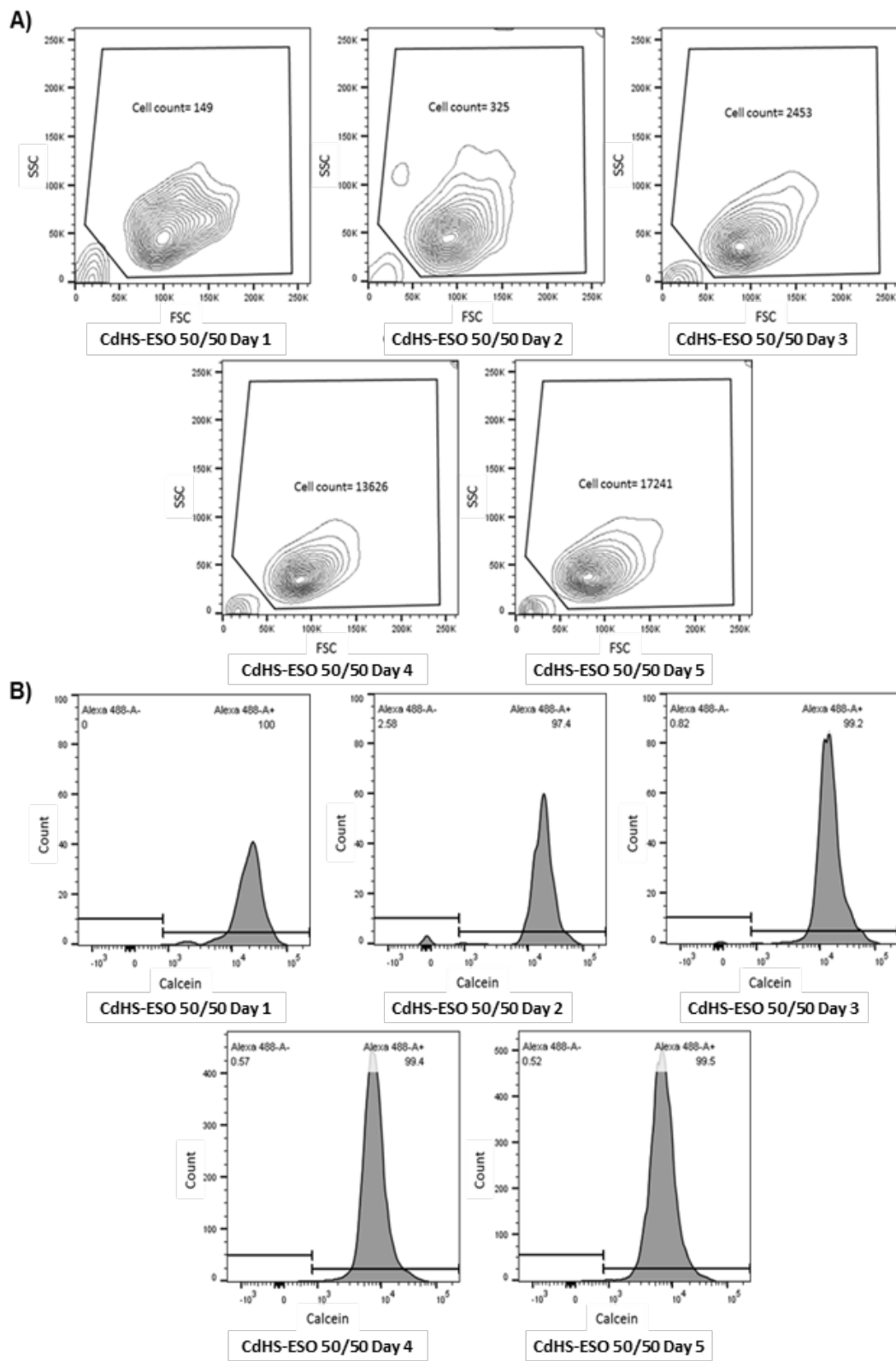


Figure S18. Representative raw flow cytometry data of cells grown on **CdHS-ESO 50/50** from day 1-5. A) Total number of cells counted. B) Percentage of those cells that are alive as determined by calcein staining.

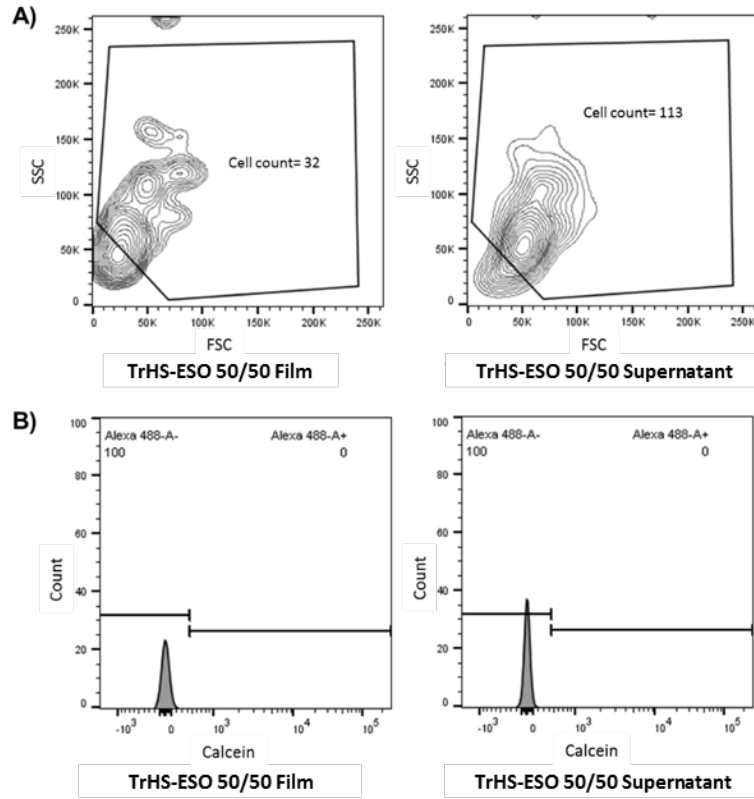


Figure S19. Representative raw flow cytometry data of cells either adhered to the **TrHS-ESO 50/50** film or from the supernatant above the film collected after 24 hours (or one day) of growth. A) Total number of cells counted. B) Percentage of those cells that are alive as determined by calcein staining.

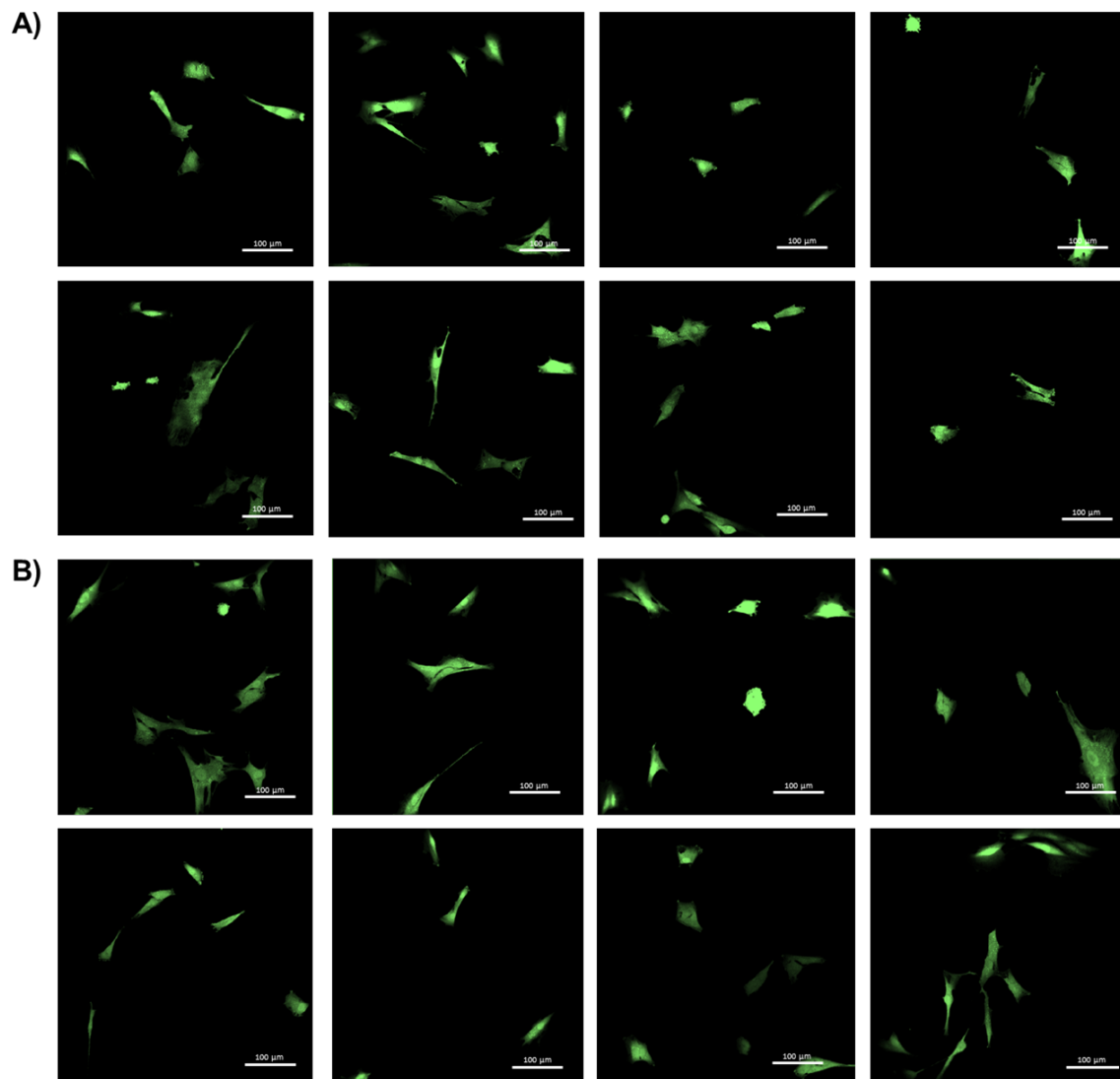


Figure S20. Representative confocal micrographs of cells expressing calcein ($\lambda= 515$ nm) after 24 h (day 1) growth on films. A) Cells on **PLG**. B) Cells on **CdHS-ESO 50/50**. Scale bar represents 100 μm .

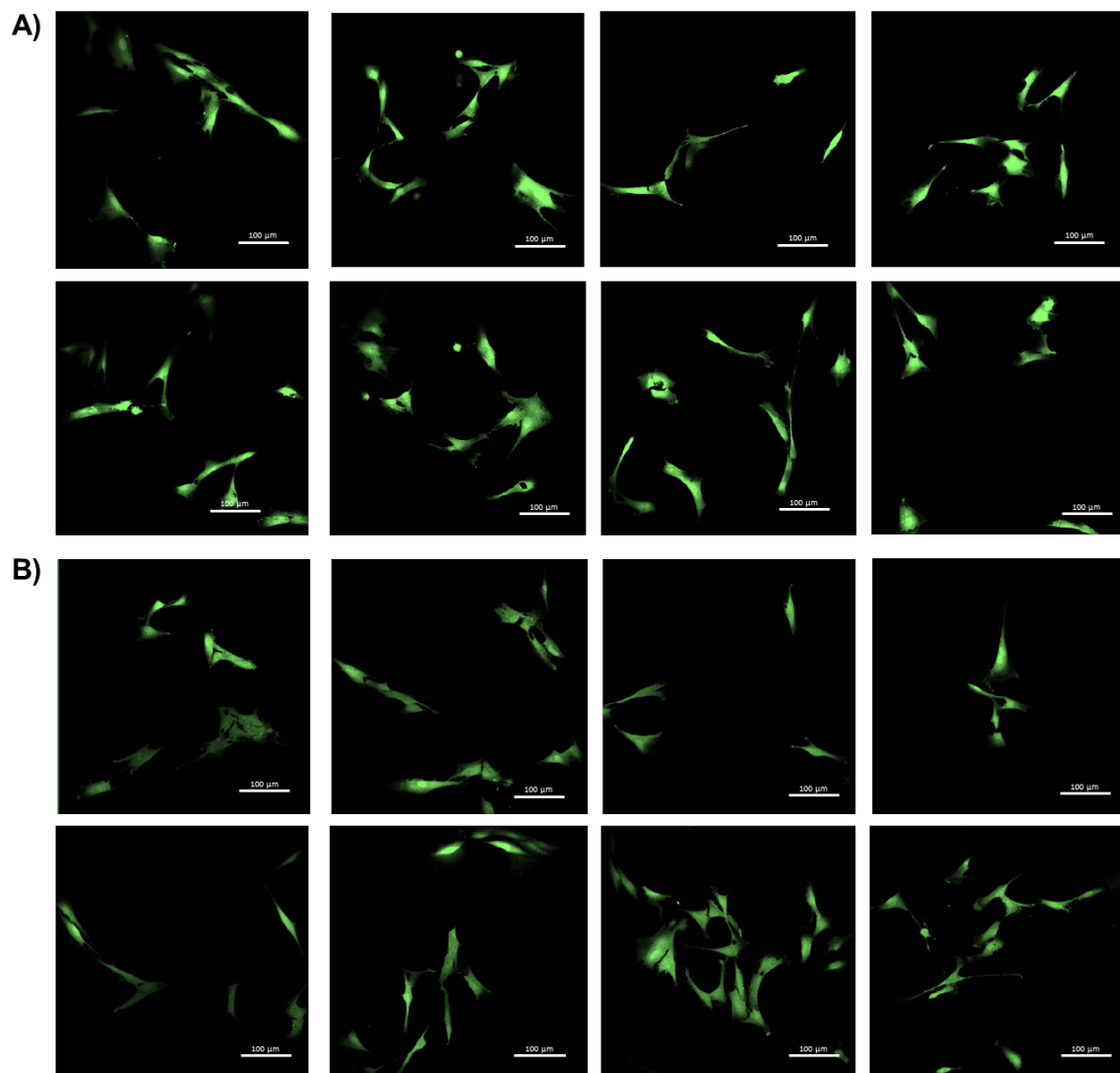


Figure S21. Representative confocal micrographs of cells expressing calcein ($\lambda = 515$ nm) after 48 h (day 2) growth on films. A) Cells on **PLG**. B) Cells on **CdHS-ESO 50/50**. Scale bar represents 100 μm .

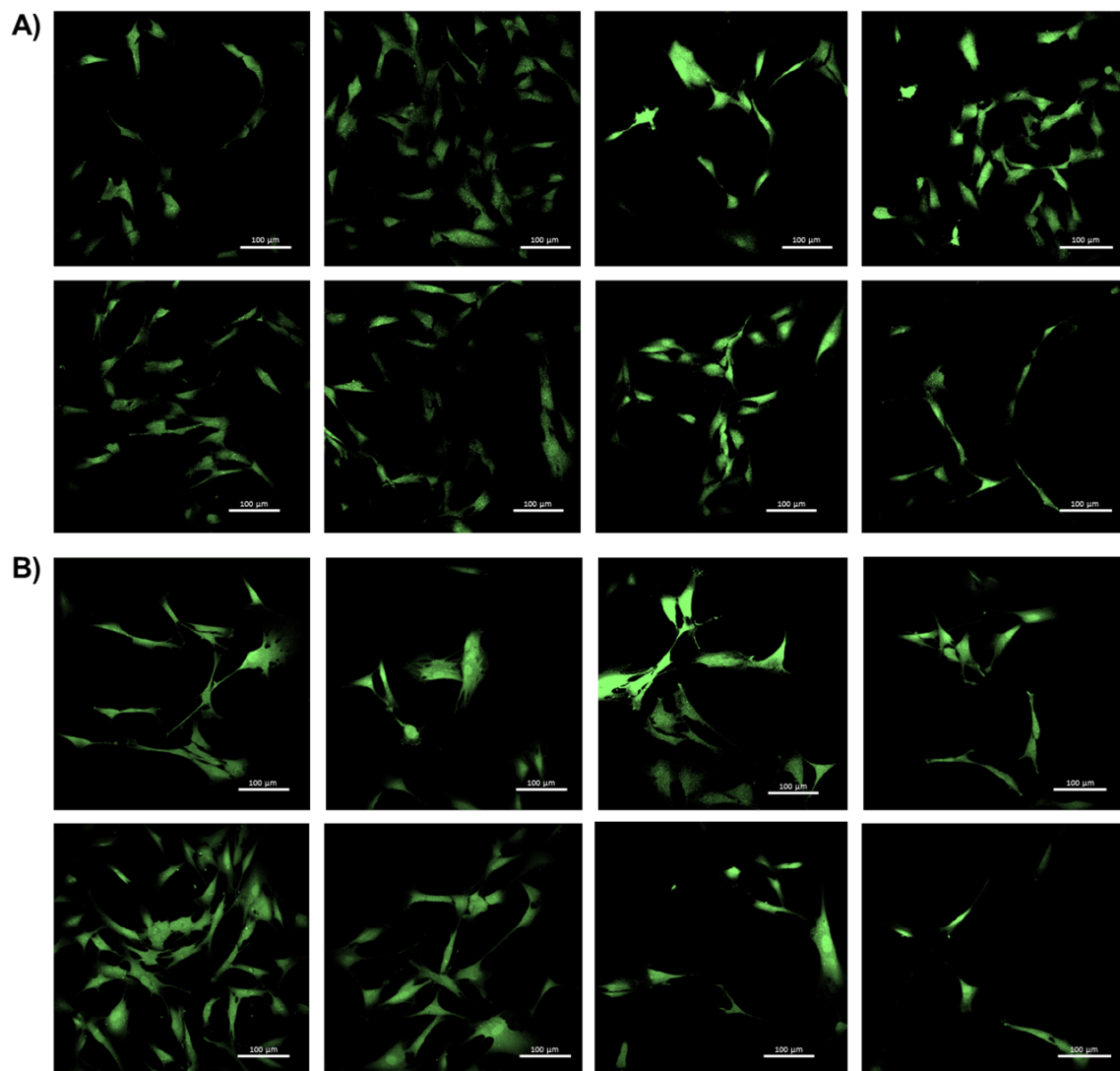


Figure S22. Representative confocal micrographs of cells expressing calcein ($\lambda = 515$ nm) after 72 h (day 3) growth on films. A) Cells on **PLG**. B) Cells on **CdHS-ESO 50/50**. Scale bar represents 100 μm .

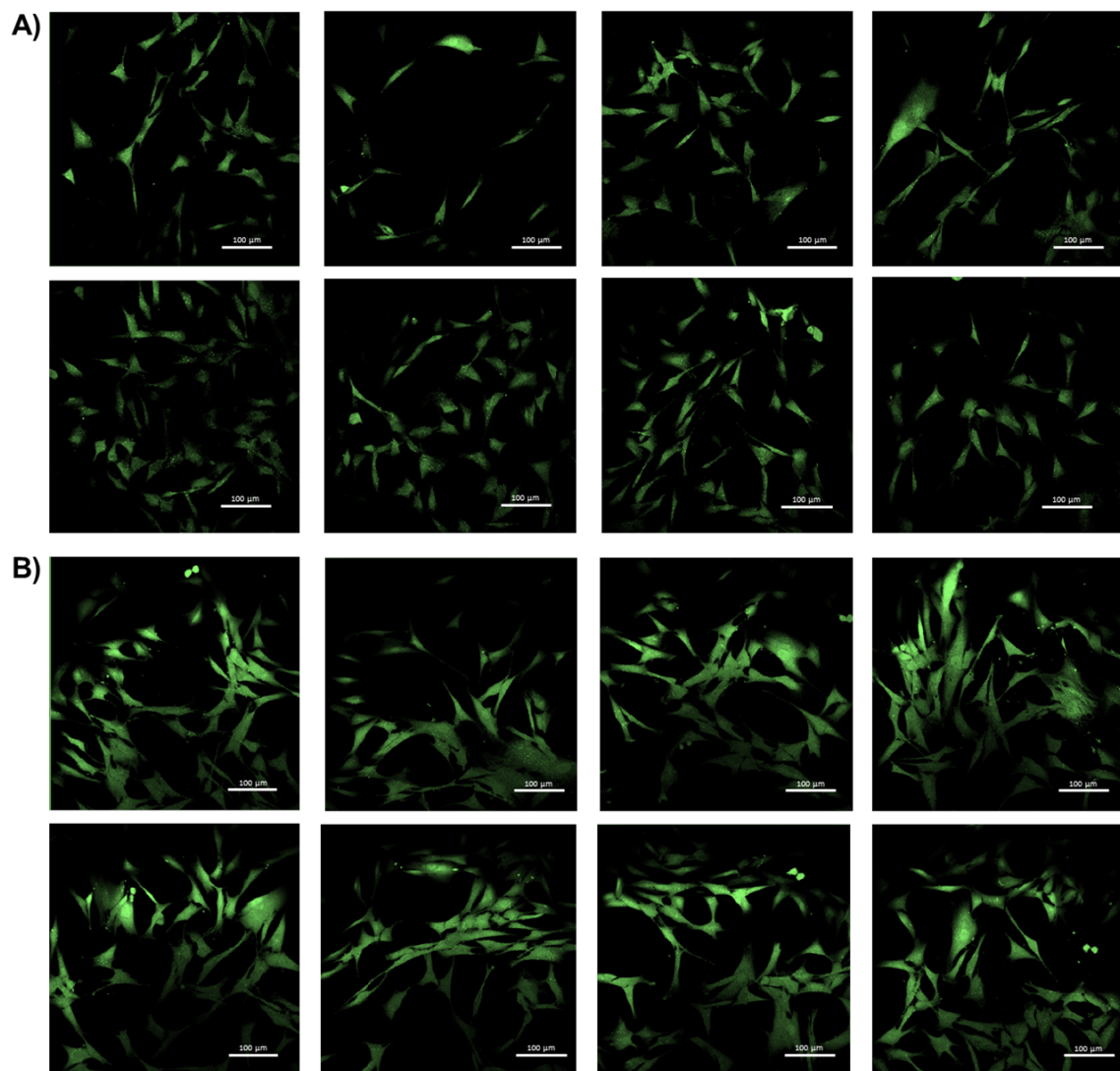


Figure S23. Representative confocal micrographs of cells expressing calcein ($\lambda= 515$ nm) after 96 h (day 4) growth on films. A) Cells on **PLG**. B) Cells on **CdHS-ESO 50/50**. Scale bar represents 100 μm .

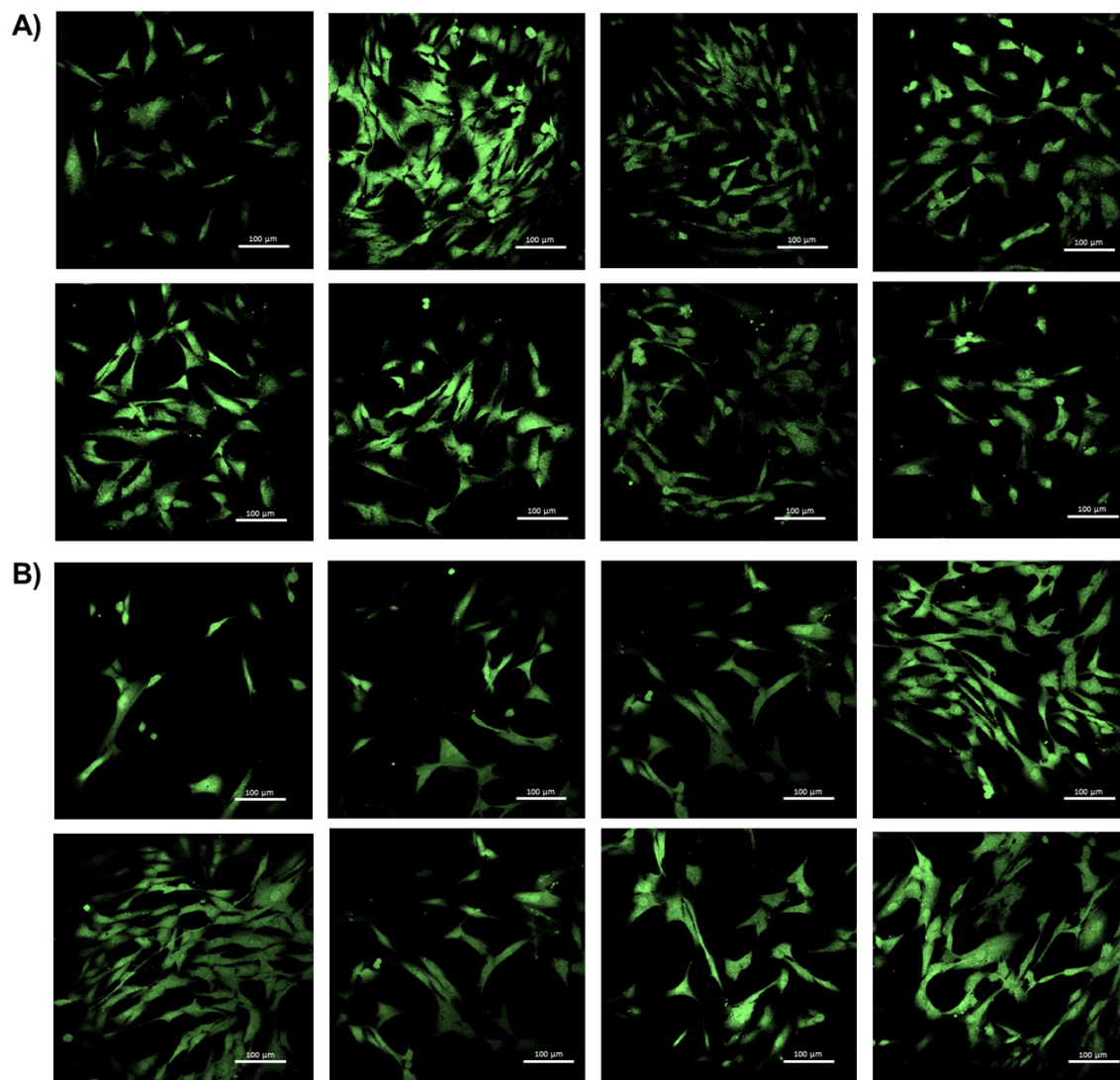


Figure S24. Representative confocal micrographs of cells expressing calcein ($\lambda = 515$ nm) after 120 h (day 5) growth on films. A) Cells on **PLG**. B) Cells on **CdHS-ESO 50/50**. Scale bar represents 100 μm .