

Supplementary Material

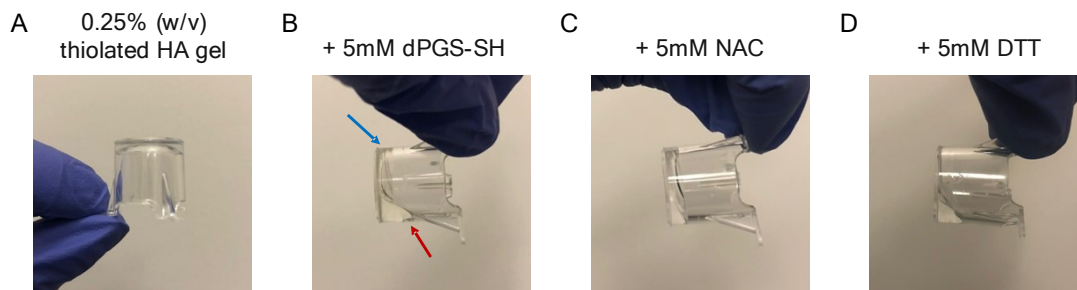


Figure S.1: Images of the disulfide crosslinked HA hydrogel before and after treatment with reducing agents. Representative images of 0.25% HA gel (A) at time zero, (B) after treatment with 5mM dPGS-SH (red arrow points to liquid phase, blue arrow points to gel phase), (C) after treatment with 5mM NAC, and (D) after treatment with 5mM DTT.

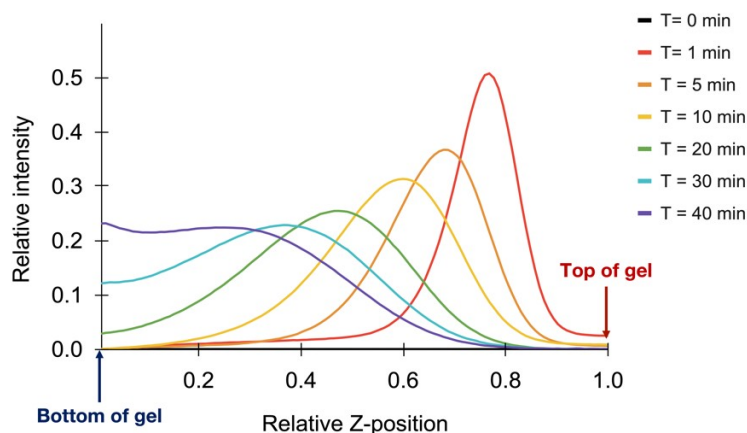
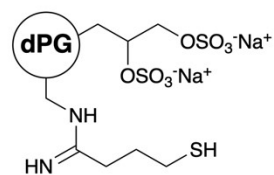


Figure S.2: Diffusion of 20kDa FITC Dextran into 0.25% disulfide crosslinked HA hydrogel. Florescence intensity as a function of relative z-position in the gel over time after the addition of 10% (v/v) FITC dextran solution to the surface of the gel. The bottom of the gel was located at $z = 0$.

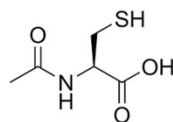
A

Thiolated dendritic polyglycerol sulfate (dPGS-SH)



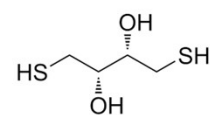
MW: 20kDa

N-acetylcysteine (NAC)



MW: 163 Da

Dithiothreitol (DTT)



MW: 154 Da

B

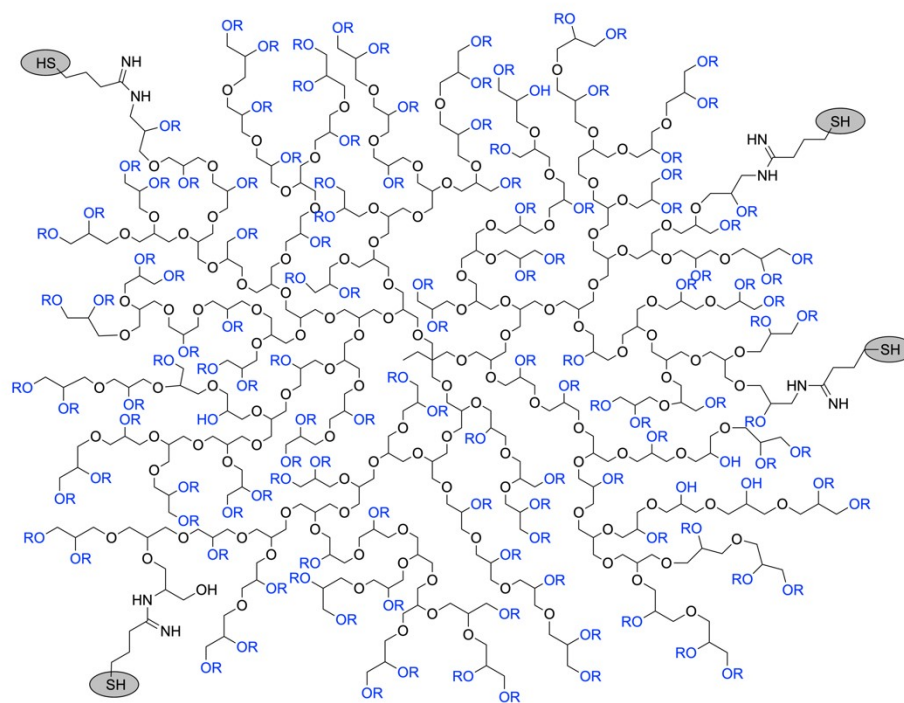
**dPGS-SH**with R = SO₃⁻Na⁺ (83%) and H (17%)

Figure S.3: Reducing agent structures. (A) Chemical structures and molecular weights of dPGS-SH, NAC, and DTT. (B) Detailed view of dPGS-SH structure.