
Percolation-induced gel–gel phase separation in a dilute polymer network

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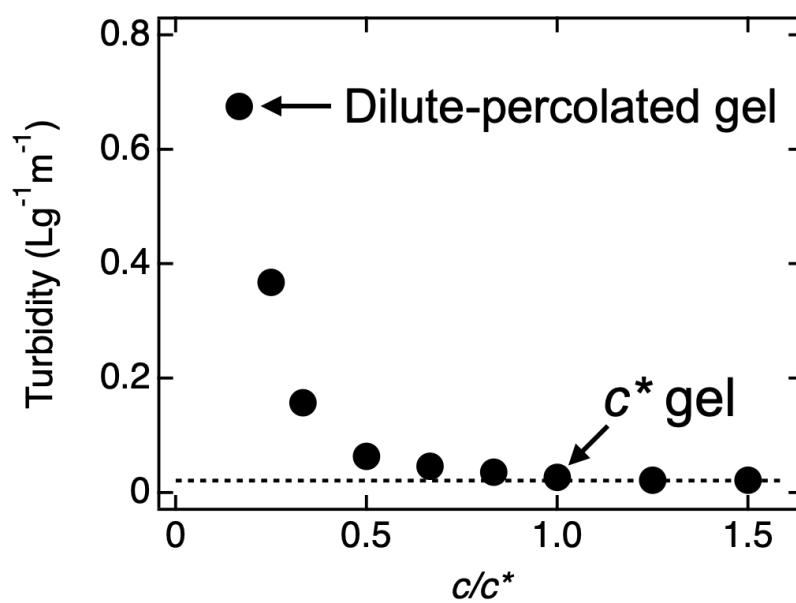
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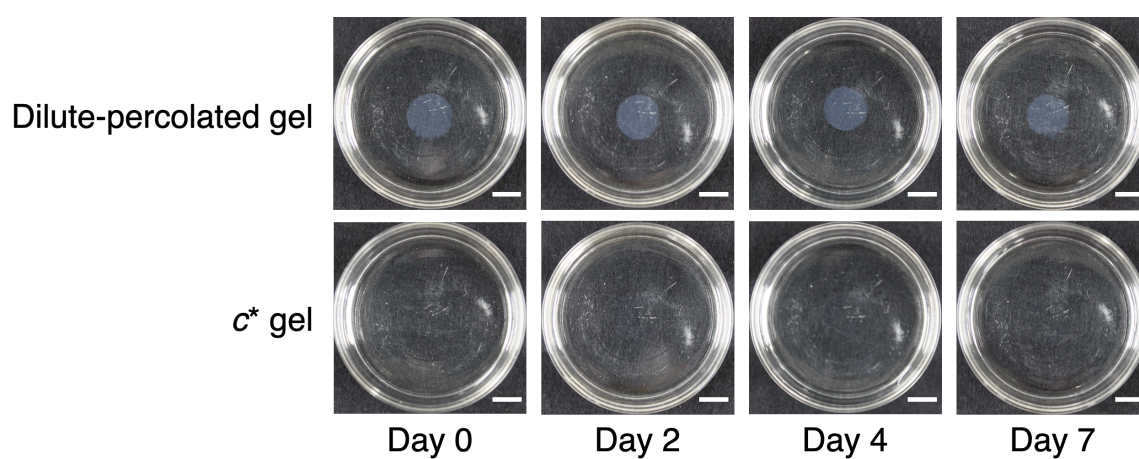
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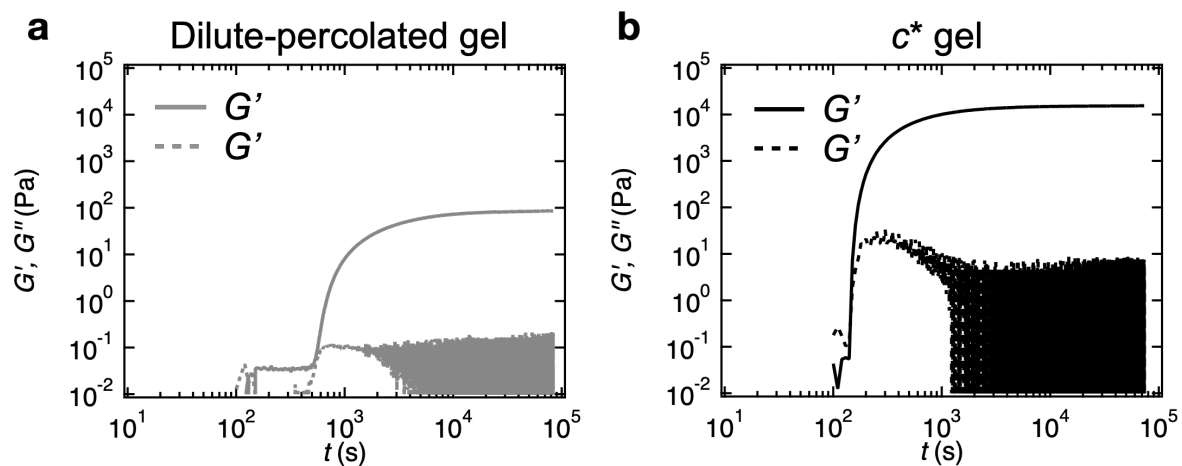
Supplementary fig. 10 | Immunostaining with the dilute-percolated gels.



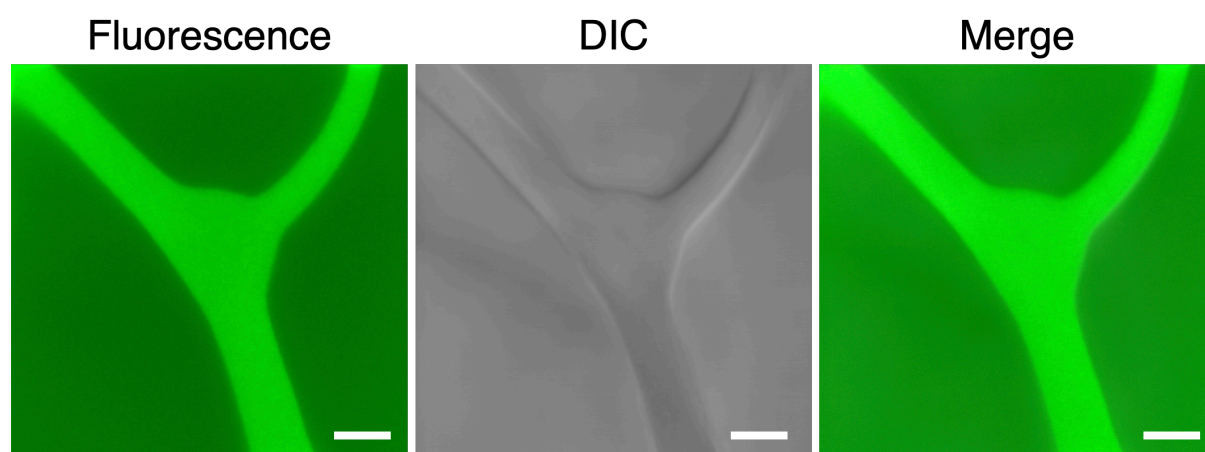
Supplementary fig. 1 | Equilibrium turbidity as a function of overlap parameter (c/c^*).
Dashed line shows the reference value of $c/c^* = 1.5$.



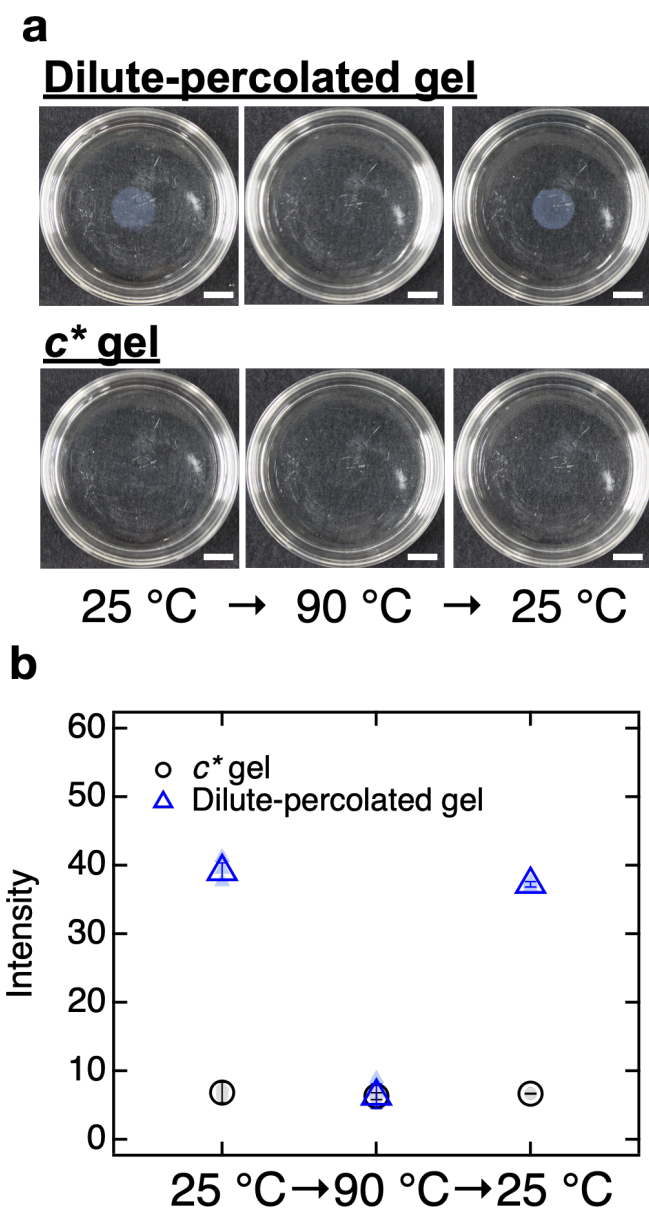
Supplementary fig. 2 | Swelling and deswelling behaviour of hydrogels. Photos of dilute-percolated and c^* gels upon immersion in distilled water for 0, 2, 4, and 7 d (scale bars: 10 mm).



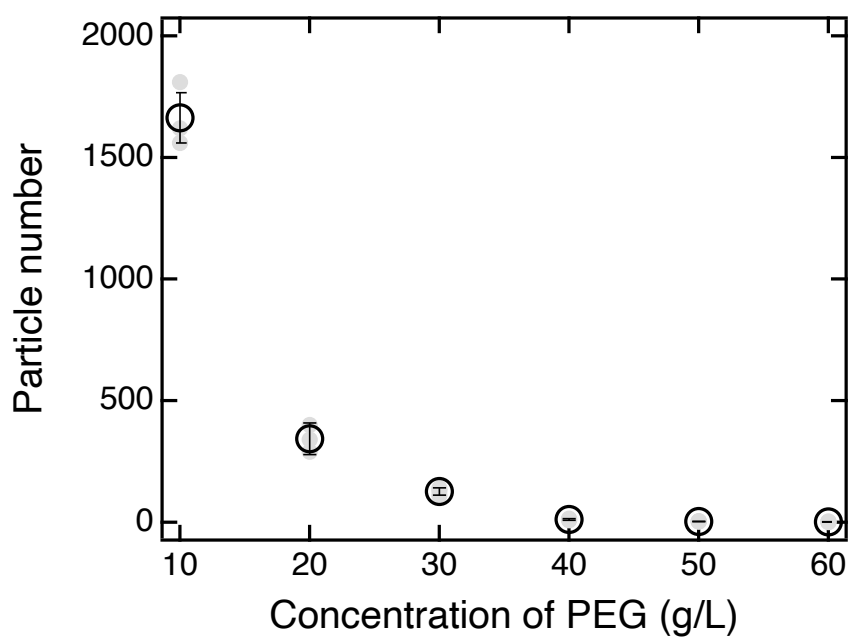
Supplementary fig. 3 | Gelation behaviour of hydrogels. Temporal changes in storage (G') and loss (G'') moduli after mixing the PEG precursors of dilute (a), and c^* (b) gels. Solid and dashed lines indicate G' and G'' , respectively. Gelation reaction was at equilibrium on the time scale after $t/t_g = 100$, and G' reached 85 and 15400 Pa for the dilute and c^* gels, respectively.



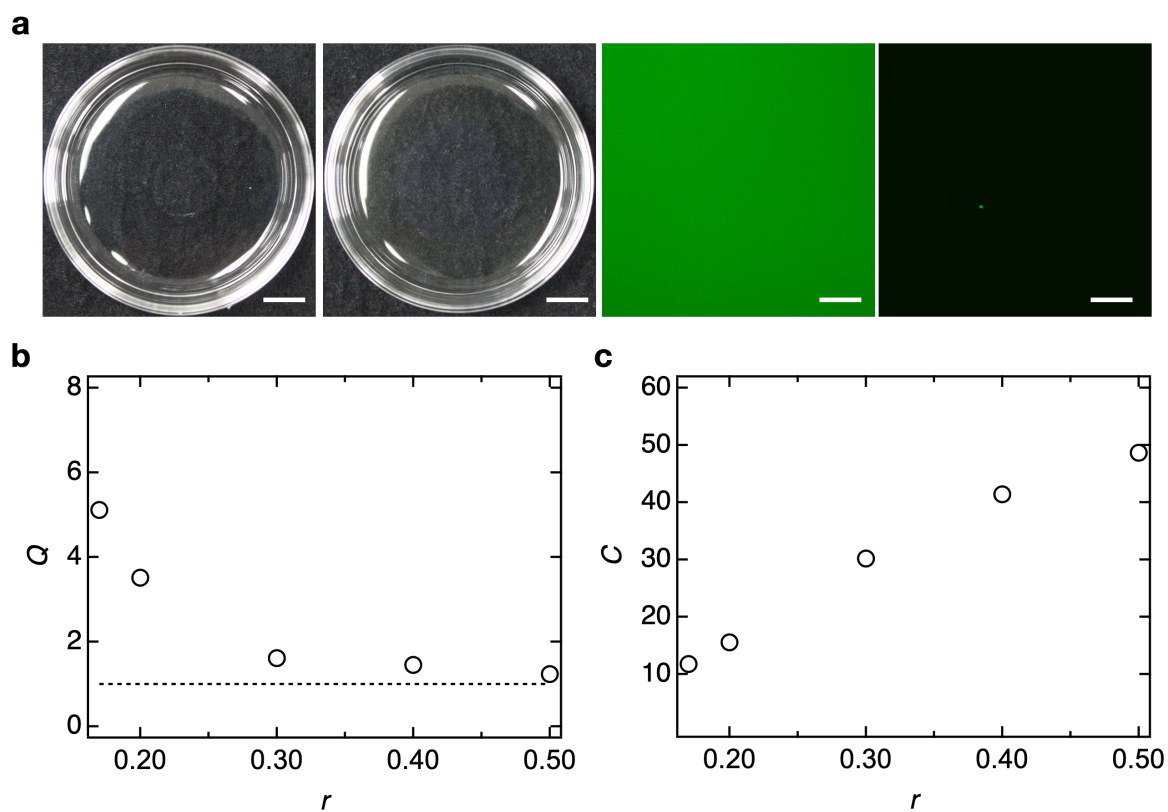
Supplementary fig. 4 | High magnification images of dilute-percolated gel. Scale bars show 5 μm .



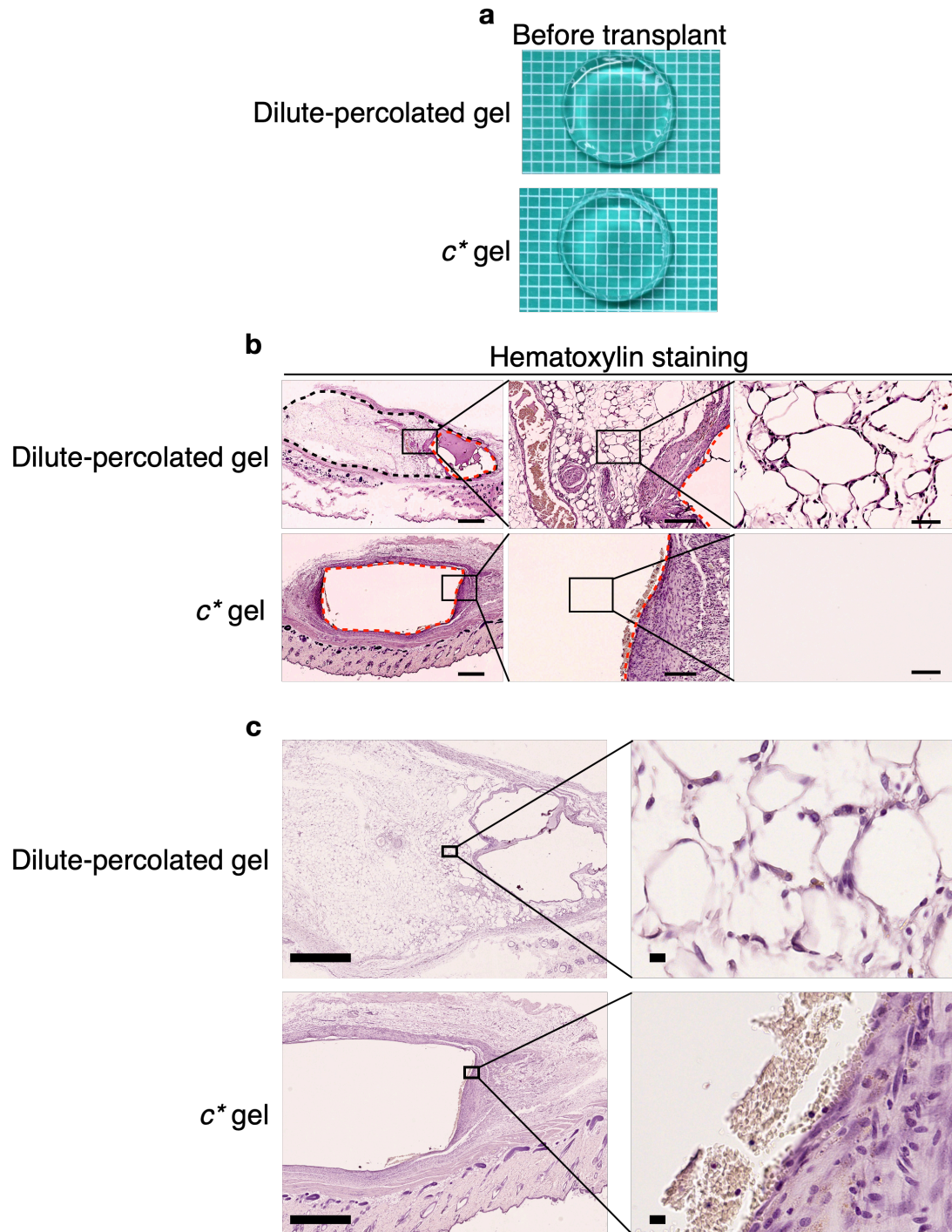
Supplementary fig. 5 | Thermodynamic stability of the mesoscale structure. **a**, Photos of the c^* and dilute-percolated gels exposed to various temperatures (scale bars: 10 mm). **b**, turbidity of the dilute-percolated (blue) and c^* gels (black). Error bars represent the standard deviation of the mean obtained from 3 samples ($n = 3$).



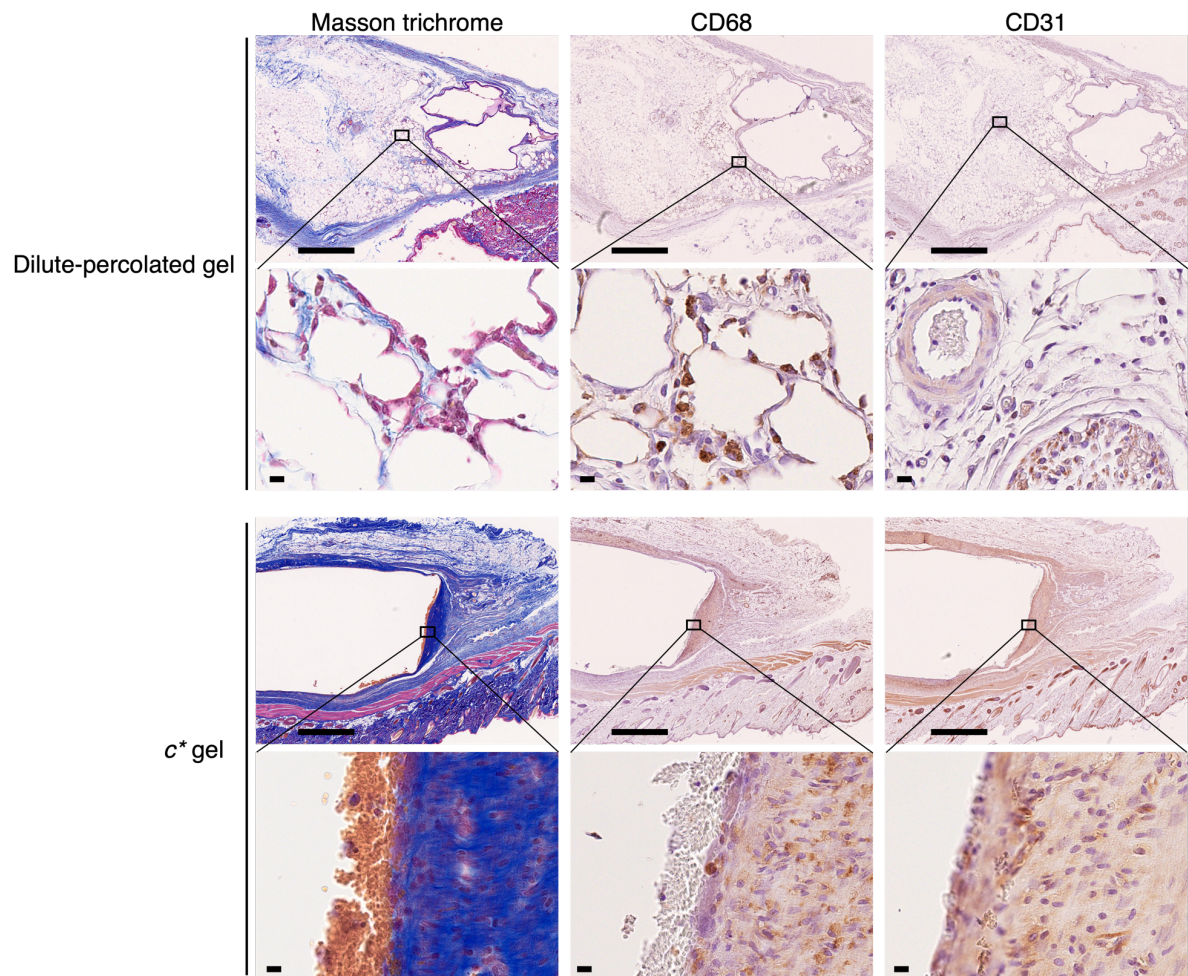
Supplementary fig. 6 | Hydrophobic behaviour of gels. Particle number as a function of concentration of PEG. Error bars represent the standard deviation of the mean obtained from 3 samples ($n = 3$).



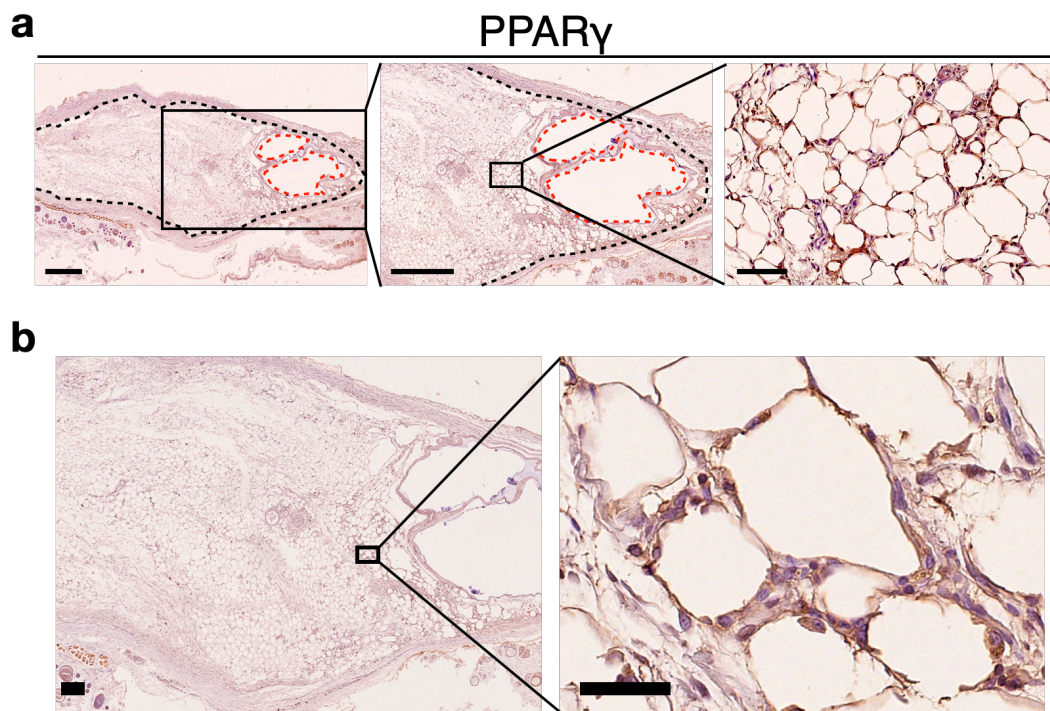
Supplementary fig. 7 | Characteristics of c^* -diluted gel. **a**, Photo of as-prepared state (Scale bar: 10 mm), swollen state (Scale bar: 10 mm), CLSM images of inner structure (Scale bar: 100 μm), and particles absorbed on the surface of gel (Scale bar: 100 μm) from left image. **b**, **c**, The swelling ratios, (**b**) and concentration after swelling (**c**) of c^* gels prepared by stoichiometrically imbalanced conditions. Dashed line in **b** shows $Q = 1$.



Supplementary fig. 8 | Gross findings and hematoxylin staining of dilute and *c gels. a,** Photos of dilute and *c** gels before implantation. **b,** Low magnification images. Scale bar shows 1 mm in left and middle images, and 100 μ m in right image. **c,** High magnification images of haematoxylin staining. Scale bars show 1 mm and 10 μ m in left and right images, respectively.



Supplementary fig. 9 | High magnification images of Masson trichrome, CD68, and CD31 for dilute-percolated and *c gel after implantation for two weeks. Scale bars show 1 mm and 10 μm in top and bottom images, respectively.**



Supplementary fig. 10 | Immunostaining with the dilute-percolated gels. a, Peroxisome proliferator-activated receptor (PPAR γ) staining of dilute gels. Scale bar shows 1 mm in left and middle images, and 100 μ m in right image. Black and red dashed lines represent implanted and remaining area of the hydrogels, respectively. **b,** High magnification image. Scale bars show 1 mm and 10 μ m in left and right images, respectively.