Supplementary Information for

Hydrogelation of dextran-based polyampholytes with cryoprotective properties via click chemistry

Minkle Jain[1, 2], Robin Rajan[1,2], Suong-Hyu Hyon[3], and Kazuaki Matsumura[1*]

1. School of Materials Science, Japan Advanced Institute of Science and Technology, 1-1 Asahidai, Nomi, Ishikawa 923-1292, Japan

2. M. Tech (CSPT), Department of Chemistry, University of Delhi, Delhi-110007, India

3. Center for Fiber and Textile Science, Kyoto Institute of Technology, Matsugasaki, Kyoto 606-8585, Japan

*To whom correspondence should be addressed: Kazuaki Matsumura

E-mail: mkazuaki@jaist.ac.jp

Tel: +81-761-51-1680

Fax: +81-761-51-1149

Supplementary materials and methods

Arginine-glycine-aspartic acid peptide (RGD) introduction

To synthesize RGD-substituted dextran (RGD-Dex), RGD substitution was performed using a GRGDS peptide sequence (Peptide Institute Inc., Osaka, Japan). The hydroxyl groups of dextran were activated by CDI (0.002 eq./sugar unit) for 2 h at 50°C. For this reaction, the required amount of GRGDS peptide dissolved in DMSO was added after activation, and the reaction was run for 10 h at 50°C. Then, the substitution of azide and PLL into the RGD-Dex was performed using procedures described in section 2.2. The RGD introduction rate was calculated using a BCA Protein Assay kit (Takara Bio Inc., Otsu, Japan) according to the instruction manual.

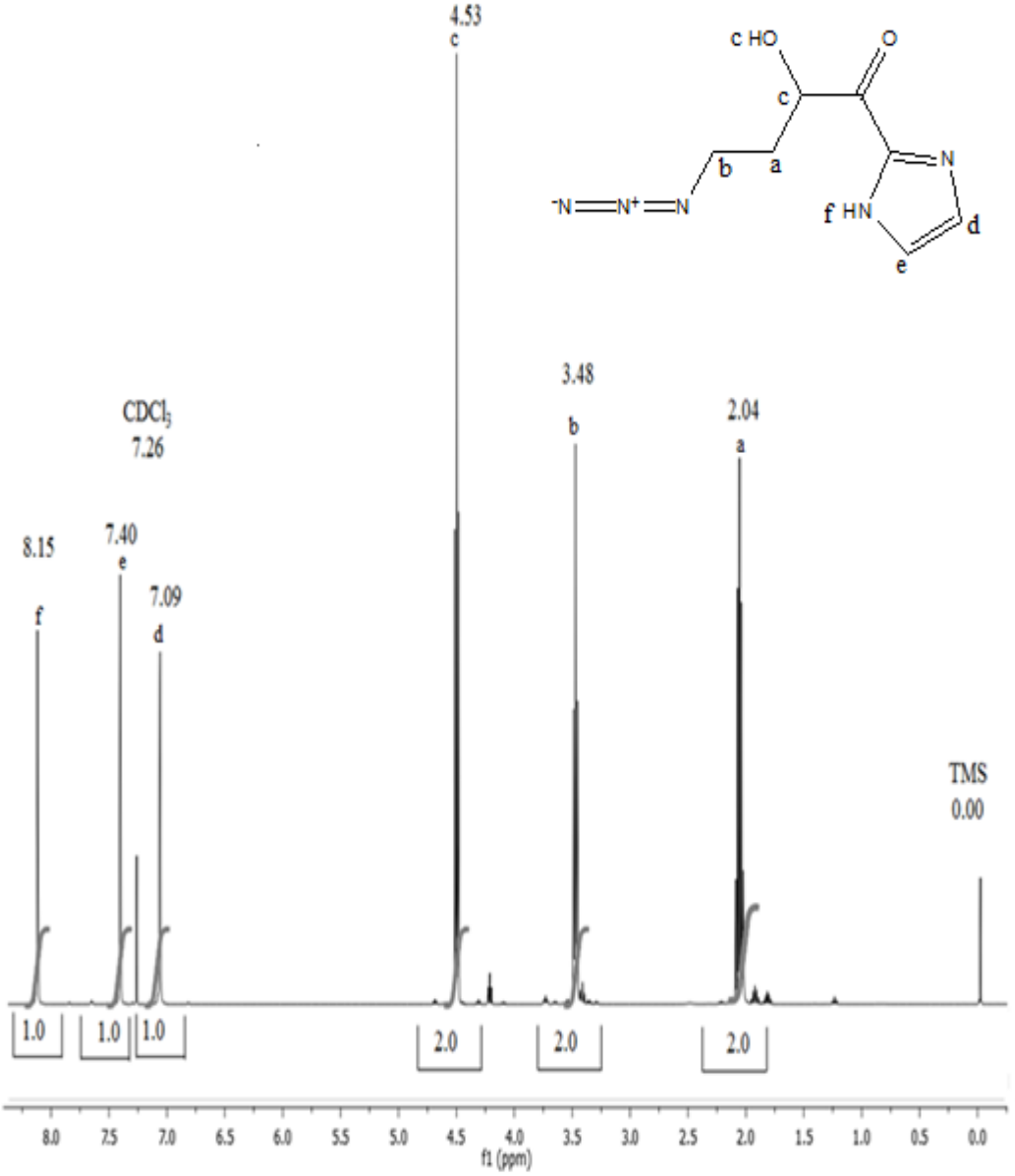

Fig.S1 ^{1}H NMR Spectra of Azide-CDI (AP-CI)

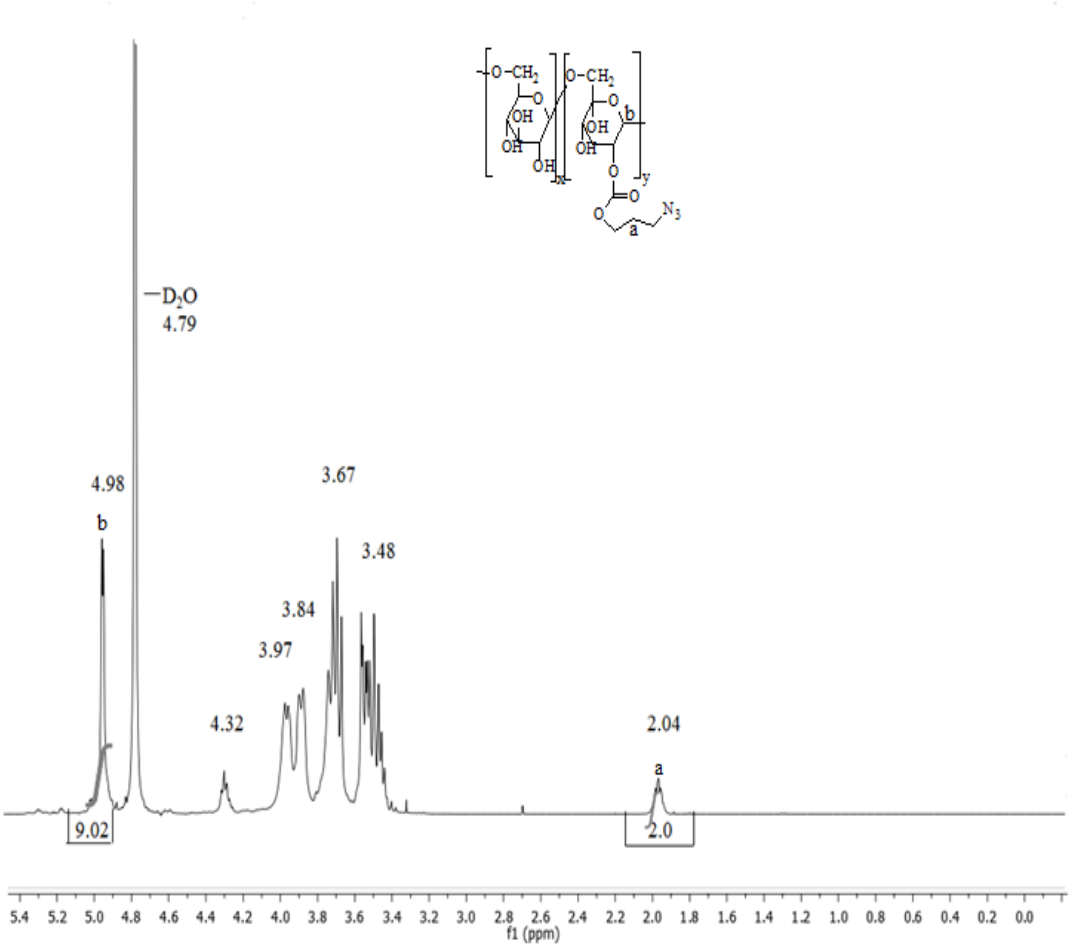

Fig.S2 ^{1}H NMR of Dextran Azide (*10.65*%)

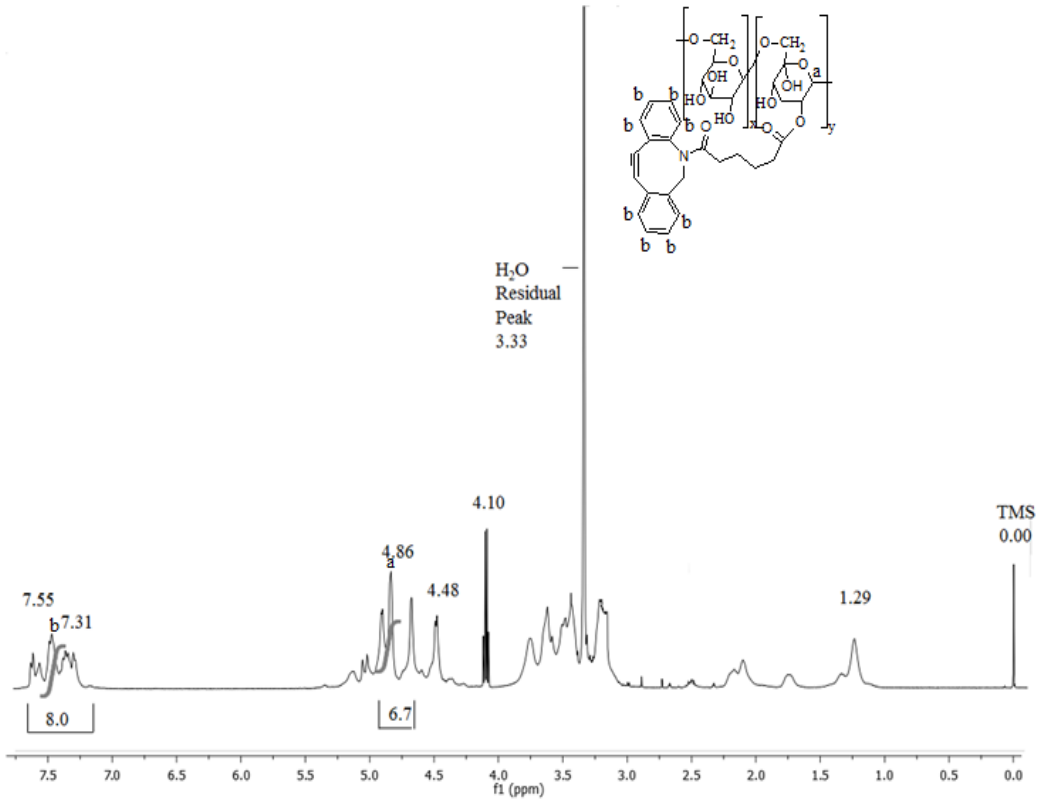

Fig.S3 ^{1}H NMR of Dextran DBCO (14.3%)

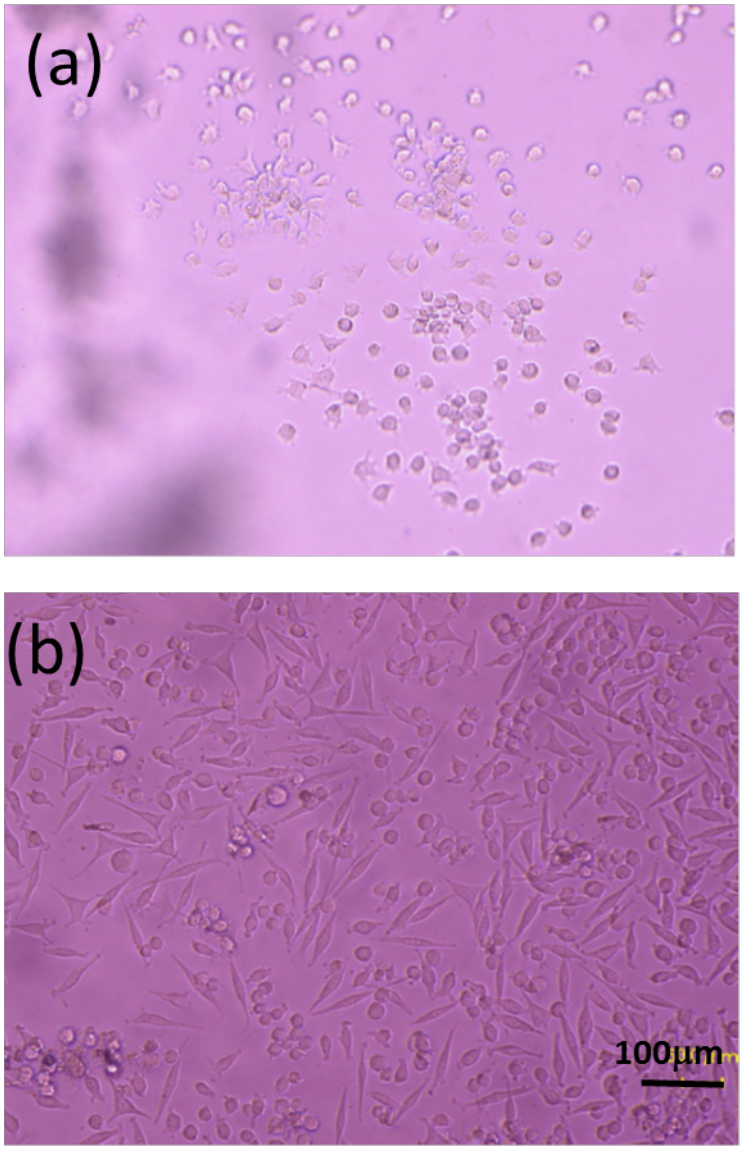

Fig.S4 Microphotographs of L929 seeded on the RGD-substituted dextran hydrogel cultured for (a) 1 day and (b) 7 days. The bar is 100 μm.