Supporting Information

Vitrification of Stem Cell-Laden Core-Shell Microfibers with Unusually Low Concentrations of Cryoprotective Agents

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Movie Captions

Movie S1. Cooling of microfibers in cryovial containing CPA #2

Movie S2. Warming of microfibers in cryovial containing CPA #2 at 37 ºC after cooling for 24 h

Movie S3. Cooling of microfibers treated with CPA #2 by device

Movie S4. Warming of microfibers treated with CPA #2 by device at 37 ºC after cooling for 24 h

Movie S5. Cryomicroscopy study of CPA #2 solution during cooling and warming

Movie S6. Cryomicroscopy study of 300 μm alginate hydrogel without CPA #2 during cooling and warming

Movie S7. Cryomicroscopy study of 300 μm alginate hydrogel with CPA #2 during cooling and warming

Movie S8. Cryomicroscopy study of 100 μm alginate hydrogel without CPA #2 during cooling and warming

Movie S9. Cryomicroscopy study of 100 μm alginate hydrogel with CPA #2 during cooling and warming

Movie S10. Cryomicroscopy study of 500 μm alginate hydrogel without CPA #2 during cooling and warming

Movie S11. Cryomicroscopy study of 500 μm alginate hydrogel with CPA #2 during cooling and warming

Movie S12. Cryomicroscopy study of 1% (w/v) alginate hydrogel without CPA #2

during cooling and warming

Movie S13. Cryomicroscopy study of 1% (w/v) alginate hydrogel with CPA #2 during cooling and warming

Movie S14. Cryomicroscopy study of 2% (w/v) alginate hydrogel without CPA #2 during cooling and warming

Movie S15. Cryomicroscopy study of 2% (w/v) alginate hydrogel with CPA #2 during cooling and warming

Movie S16. Cryomicroscopy study of 3% (w/v) alginate hydrogel without CPA #2 during cooling and warming

Movie S17. Cryomicroscopy study of 3% (w/v) alginate hydrogel with CPA #2 during cooling and warming

Supplementary Figures

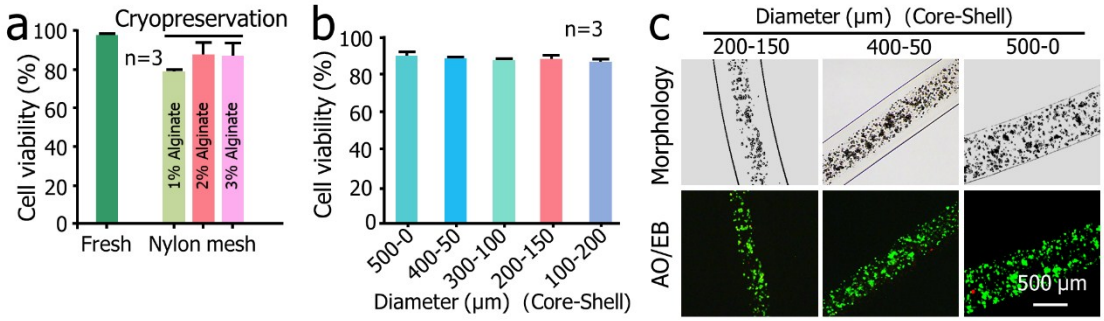

Figure S1. Effect of concentration of alginate hydrogel and thickness of microfiber shell on cryopreservation. (a) Viability of MSC-laden microfibers with different concentration of alginate after cryopreservation. (b) Viability of MSC-laden microfibers with different shell thicknesses after cryopreservation. (c) Fluorescent images of MSC-laden microfibers with different shell thicknesses.

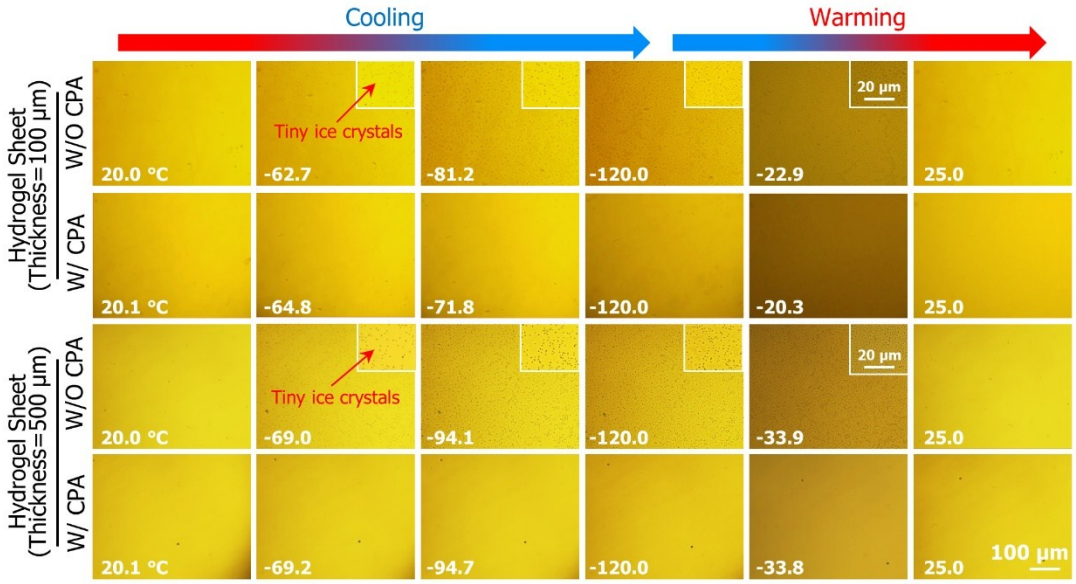

Figure S2. Cryomicroscopy study of alginate hydrogels of different thicknesses (100 µm and 500 µm) without or with CPA during cooling and warming.

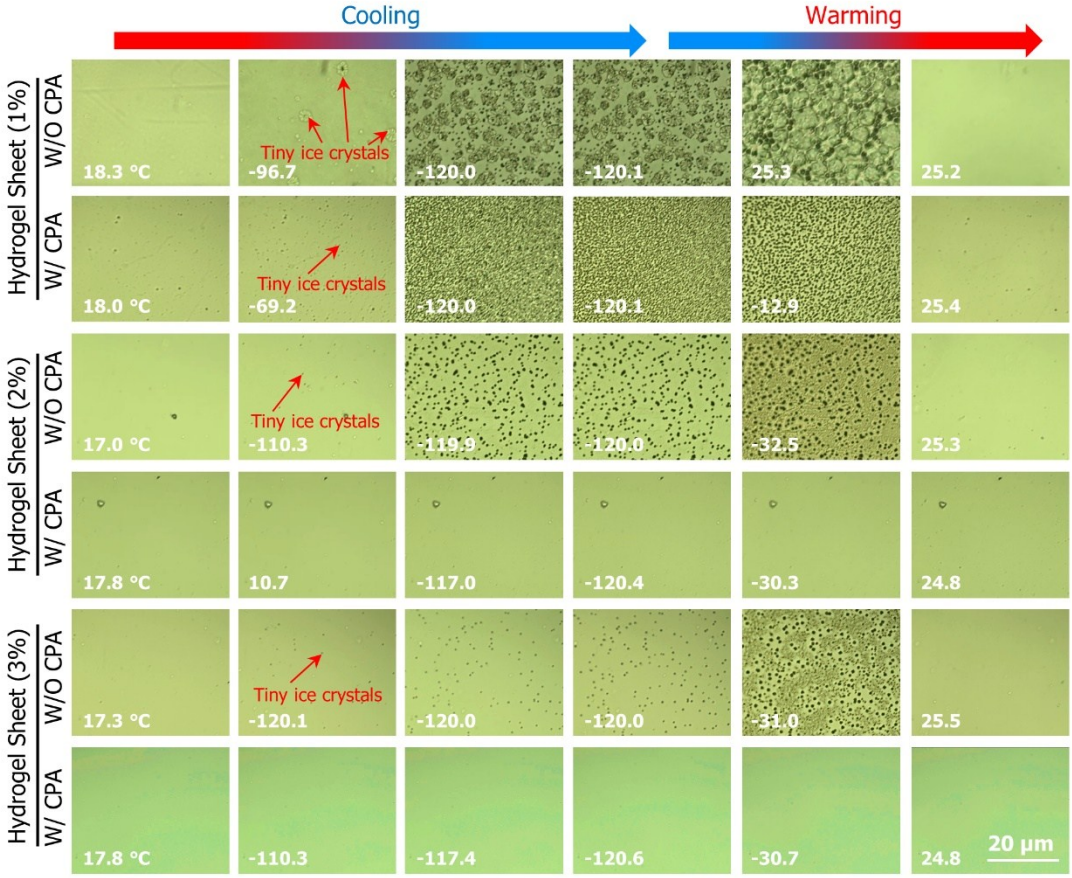

Figure S3. Cryomicroscopy study of different concentration of alginate hydrogels (1, 2, 3% (w/v)) without or with CPA during cooling and warming.