Supplemental Information

Bioprinting Schwann cell-laden scaffolds from low-viscosity hydrogel compositions

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Both 10RAHF/Schwann cell and 40RAHF/Schwann cell with a cell density of $1 \times 10^6$ cells/ml were prepared. A 40 uL aliquot of each cell suspension was carefully pipetted onto a round glass slide for 10 min crosslinking in medium containing 25 U/ml thrombin and 100 mM calcium ions. Solidified hydrogels were rinsed twice with Tris buffered saline (TBS), and subsequently cultured in a 24-well plate using culture medium. Calcein-AM solution with a final concentration of 1 $\mu$g/ml was added to each well for 30 min after 4 d’s culture, and the stained cells was observed under a fluorescence microscope (Carl Zeiss Axiovert 100). Three hydrogels were prepared for each group and three random images were taken for each hydrogel sample. Cell circularity was analyzed using ImageJ.

Results show that Schwann cell circularity in 10RAHF was 0.886 $\pm$ 0.051, which was significantly higher than cell circularity in 40RAHF and control, indicating low cell attachment. When fibrin reached 40 mg/ml, the value of circularity was reduced to 0.758 $\pm$ 0.026, showing that more Schwann cells were stretched and elongated. As such, hydrogel compensation of 40RAHF was selected for bioprinting Schwann cell-laden scaffolds.