

SUPPLEMENTAL MATERIAL

for

Polypyrrole-chitosan conductive biomaterial synchronizes cardiomyocyte contraction and improves myocardial electrical impulse propagation

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Supplementary Figure and Movie Legends

Figure S1

Effect of cryoinjury on rat myocardial function. Scar formation in adult rat left ventricle was induced via cryoinjury. Measurement of ejection fraction via echocardiography (A) did not reveal any functional differences in hearts pre- (n= 6) and 7 days post-injury (B, n = 5). Data is presented as mean±SEM.

Movie S1

Video recording of calcium signal propagation in physically-isolated CM clusters grown on polystyrene culture dishes under low magnification (0.63X) view. Propagation waves in the central (top) and peripheral (bottom) clusters do not interact.

Movie S2

Video recording of calcium signal propagation of CMs cultured on polystyrene dishes under high magnification (6.3X) view showing individual cell calcium signal.

Movie S3

Video recording of calcium signal propagation in physically-isolated CM clusters grown on CHI-coated culture dishes under low magnification (0.63X) view. Propagation waves in the central (bottom) and peripheral (top) clusters do not interact.

Movie S4

Video recording of calcium signal propagation of CMs cultured on CHI-coated culture dishes under high magnification (6.3X) view showing individual cell calcium signal.

Movie S5

Video recording of calcium signal propagation in physically-isolated CM clusters grown on PPY:CHI conductive hydrogel-coated culture dishes under low magnification (0.63X) view. The majority of propagation waves originating from the peripheral (right) clusters are able to propagate to and activate the central CM cluster (left).

Movie S6

Video recording of calcium signal propagation of CMs cultured on PPY:CHI-coated dishes under high magnification (6.3X) view showing individual cell calcium signal.

Movie S7

Video recording of voltage-sensitive dye measured electrical signal propagation in a healthy control heart. The left panel contains the black and white raw image, the central panel contains the processed voltage-sensitive dye signal pseudocolor map, and the right panel contains the overlay of the two.

Movie S8

Video recording of voltage-sensitive dye measured electrical signal propagation in a saline-treated cryoinjured heart. The left panel contains the black and white raw image, the central panel contains the processed voltage-sensitive dye signal pseudocolor map, and the right panel contains the overlay of the two.

Movie S9

Video recording of voltage-dye measured electrical signal propagation in a CHI-treated cryoinjured heart. The left panel contains the black and white raw image, the central panel

contains the processed voltage-sensitive dye signal pseudocolor map, and the right panel contains the overlay of the two.

Movie S10

Video recording of voltage-dye measured electrical signal propagation in a PPY:CHI-treated cryoinjured heart. The left panel contains the black and white raw image, the central panel contains the processed voltage-sensitive dye signal pseudocolor map, and the right panel contains the overlay of the two.

Figure S1

