Supporting Information

Title: Inorganic-Organic Interpenetrating Network Hydrogels as Tissue-Integrating Luminescent Implants: Physicochemical Characterization and Preclinical Evaluation

*Rachel M. Unruh, Lindsey R. Bornhoeft, Scott P. Nichols, Natalie A. Wisniewski, and Michael J. McShane**

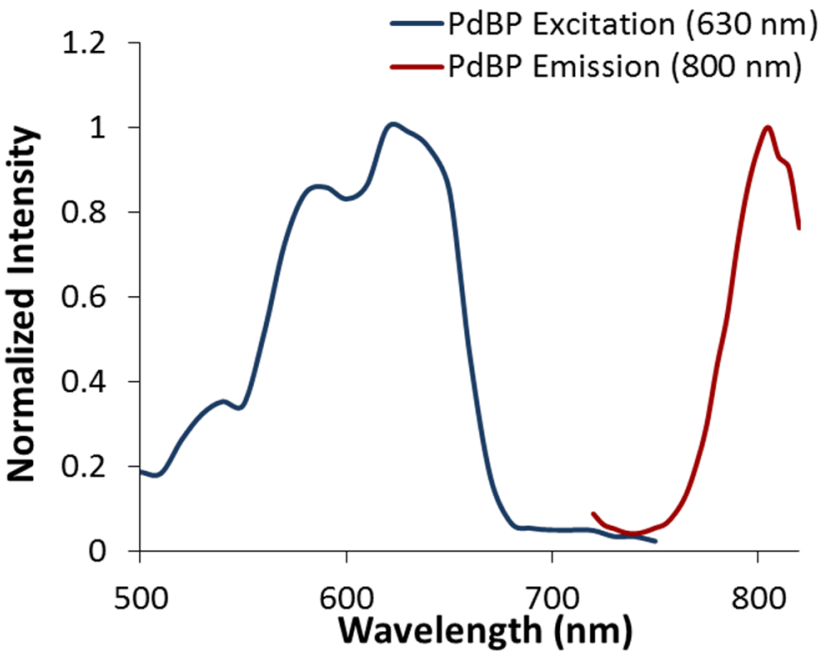

Figure S1. PdBP excitation and emission spectra

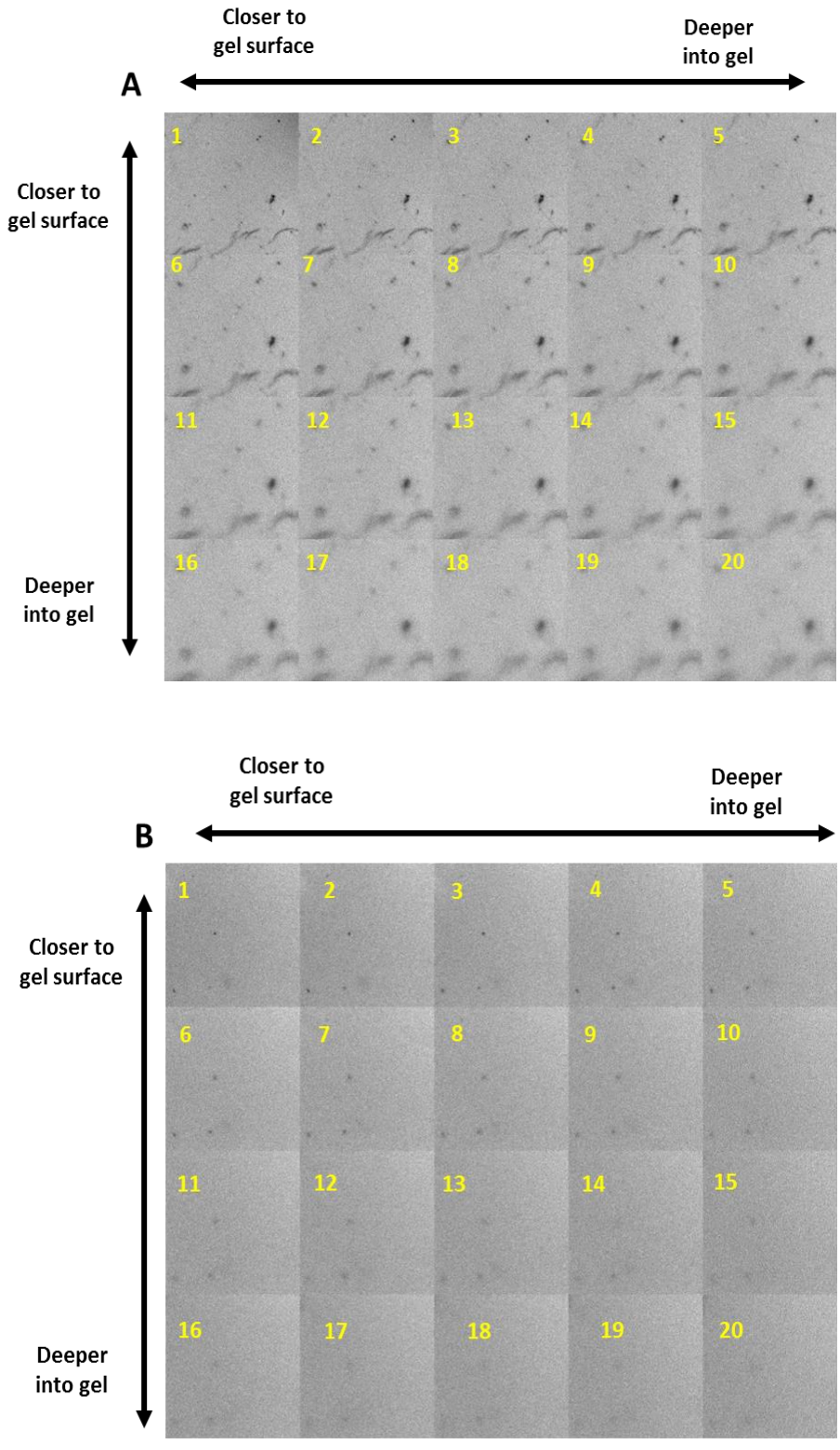

Figure S2. Begins here (full caption on next page). Figure spans two pages.

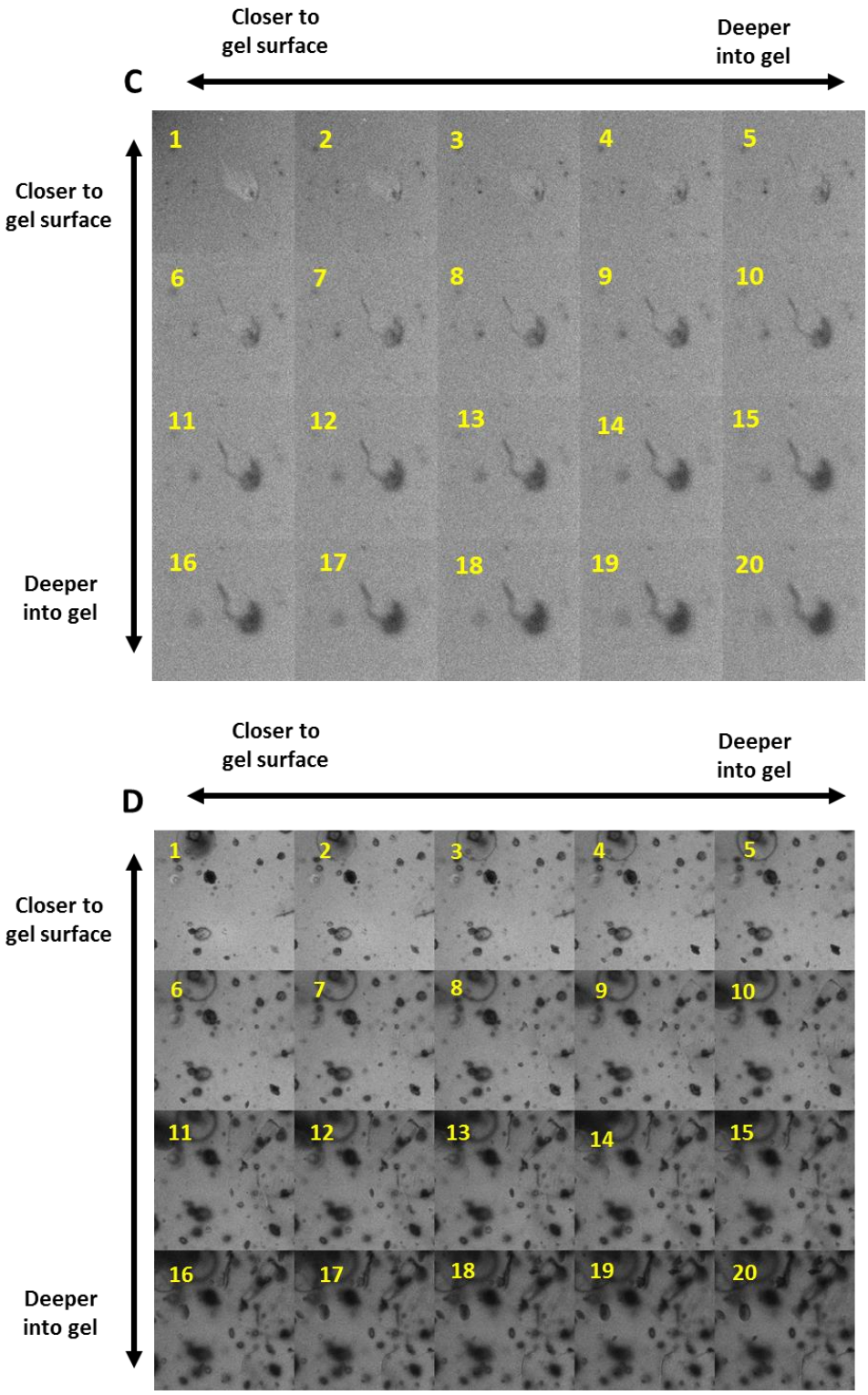

Figure S2. Montages of confocal Z-stack slices. Each image within the montage represents a single slice. Increasing slice number corresponds to a deeper location in the gel. Formulations corresponding to each image are as follows: A = 50:50 TRIS:DMA, B = 60:40 TRIS:DMA, C = 70:30 TRIS:DMA, and D = 80:20 TRIS:DMA.

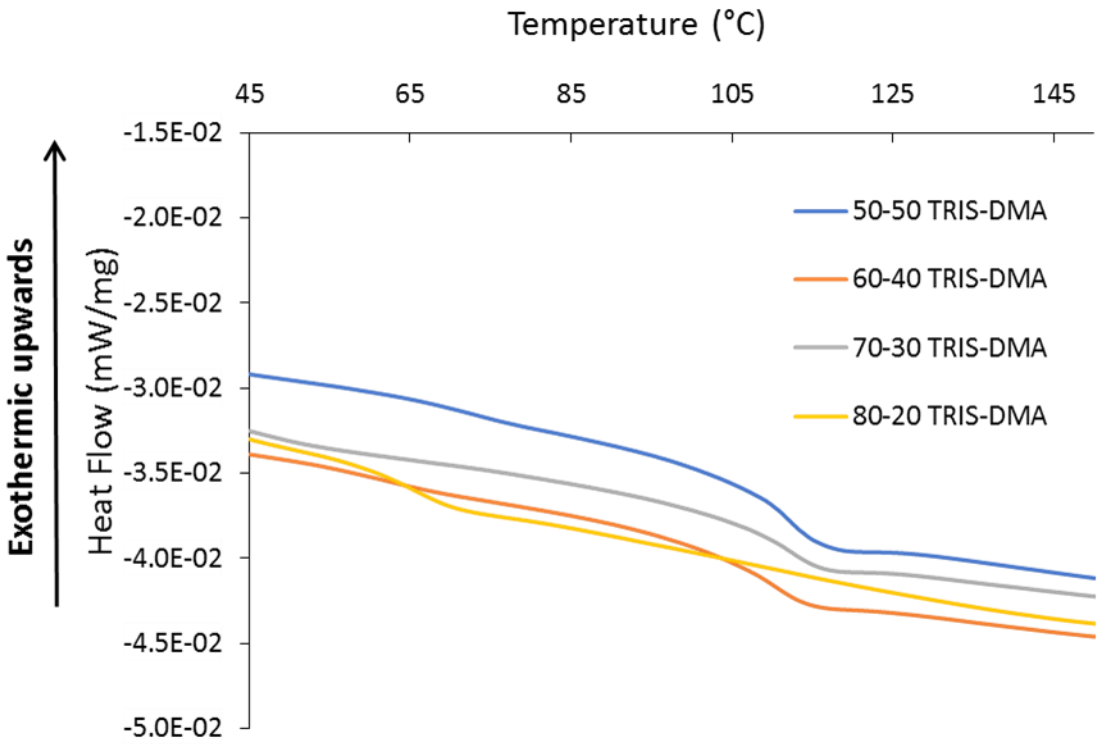

Figure S3. Raw DSC Data; representative curves

Table S1. Sensitivity and percent change for IPN ICC implants from baseline to peak during *in vivo* oxygen challenge (n=3 ± 95% CI).

Implantation time (days)	Sensitivity (μs)	Percent Change in Signal Level
0	50.09 ± 94.55	164.24 ± 287.92
6	69.42 ± 30.66	55.23 ± 57.37
20	29.45 ± 1.90	8.72 ± 3.20
34	19.61 ± 4.18	8.72 ± 2.17
48	35.49 ± 11.42	16.02 ± 6.36
76	45.05 ± 13.83	21.47 ± 7.94

Table S2. Sensitivity and percent change for pHEMA ICC implants from baseline to peak during *in vivo* oxygen challenge (n=3 ± 95% CI).

Implantation time (days)	Sensitivity (μs)	Percent Change in Signal Level
0	49.98 ± 9.45	74.07 ± 20.91
8	26.75 ± 10.14	19.70 ± 7.28
14	40.08 ± 18.72	28.42 ± 16.83
28	24.13 ±5.31	12.74 ± 3.51
42	21.12 ±5.31	11.07 ± 3.12
56	39.03 ±8.73	22.08 ± 7.31
84	54.30 ± 9.71	30.91 ± 5.64

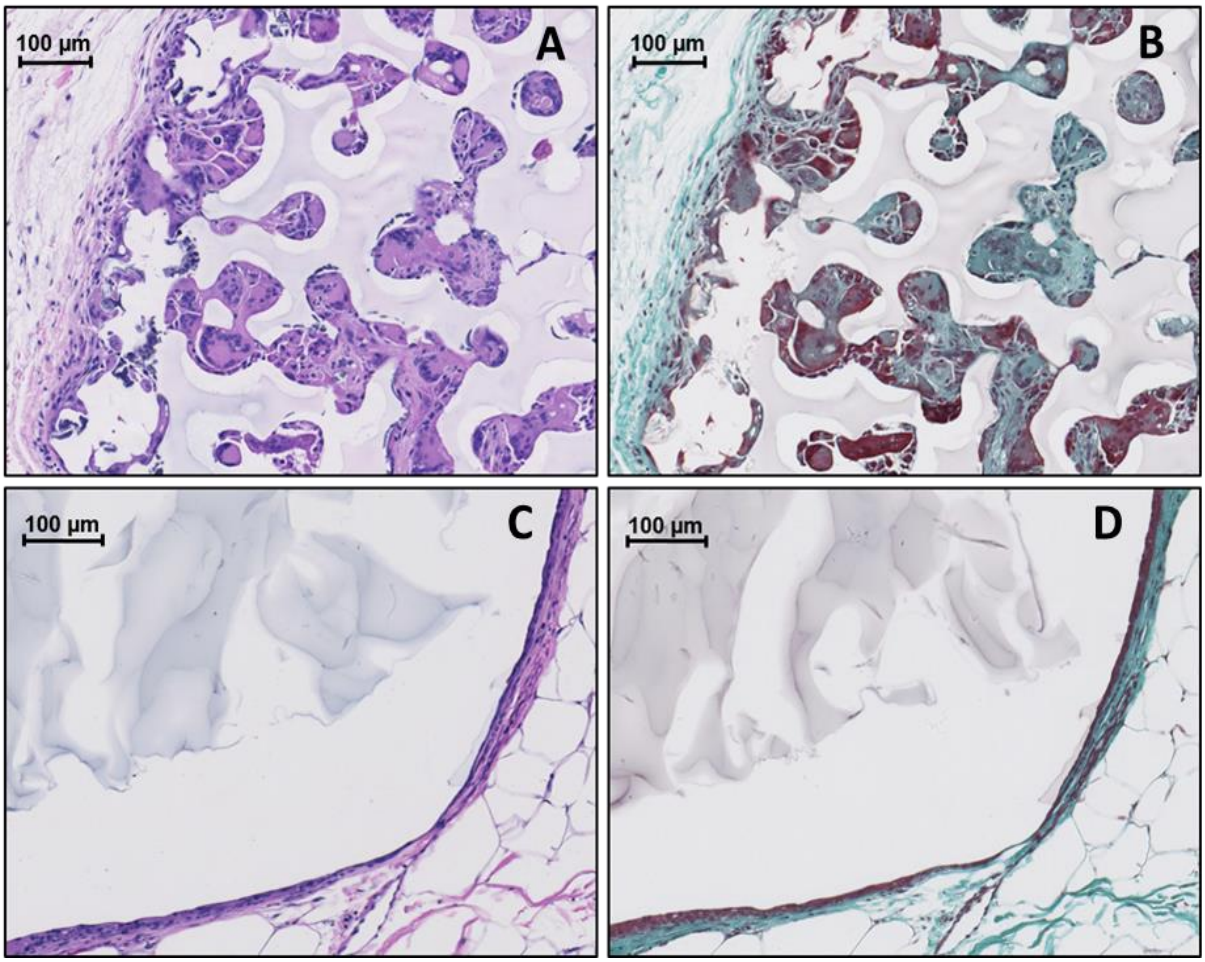

Figure S4. Histology images (H&E stain: A and C; Masson's Trichrome stain: B and D) showing side-by-side comparison of the loosely-woven collagen around the IPN ICCs (A-B) and tightly-packed collagen surrounding IPN monolith implants (C-D).