SUPPORTING INFORMATION for

Biodegradable polydisulfide dendrimer nanoclusters as MRI contrast agents

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SUPPLEMENTARY FIGURES

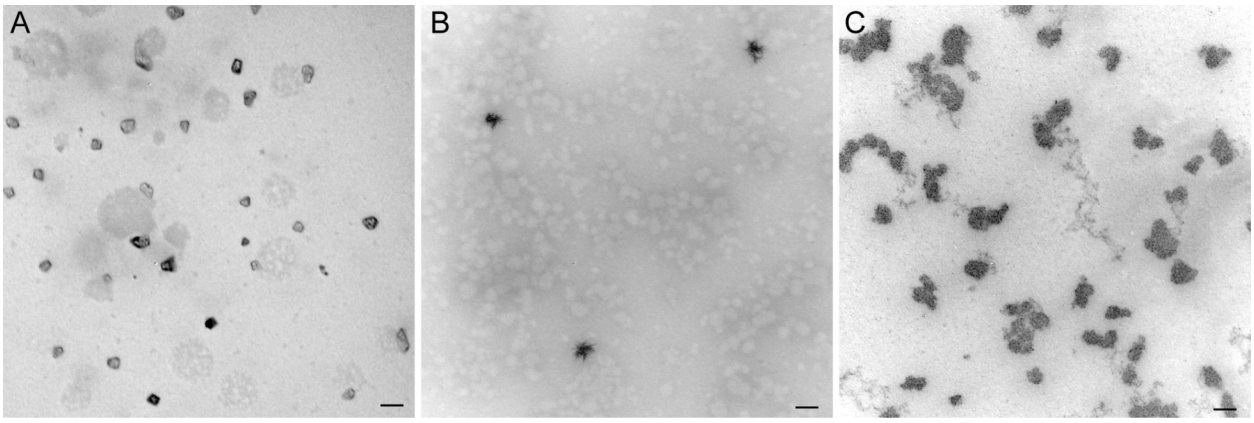

Figure S1. TEM images of polydisulfide DNCs. TEM images were acquired for polydisulfide DNCs with hydrodynamic diameters of (A) 59 nm, (B) 91 nm, and (C) 142 nm. The physical sizes measured by TEM, for these three DNC formulations, are 52±17 nm, 86±21 nm, and 121±10 nm, respectively. All scale bars are 100 nm. The grayish shapes are salt crystals due to PBS stock solution.

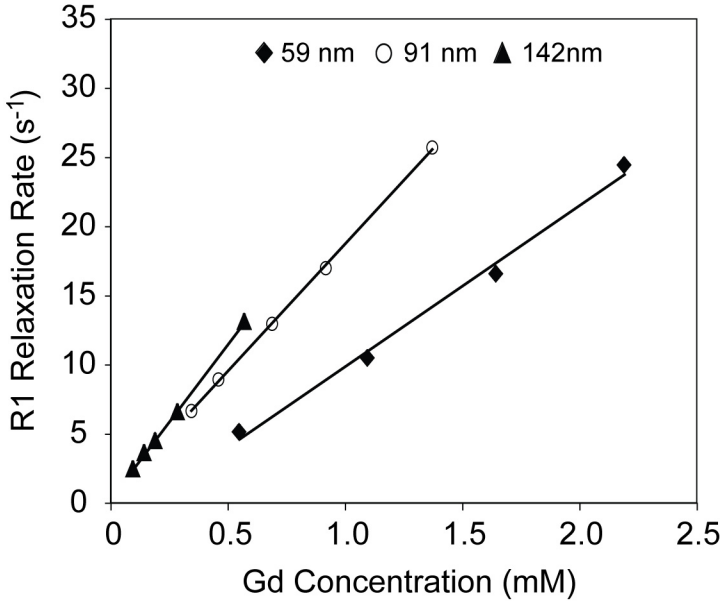

Figure S2. Relaxivity (r_1) of polydisulfide DNCs with various hydrodynamic diameters. The relaxation rates (R_1) of DNCs with hydrodynamic diameters of 59 nm, 91 nm, and 142 nm were measured at various Gd concentrations using a Bruker mq60 MR relaxometer operating at 1.41 T (60 MHz). Linear curve fits indicated that the 142 nm polydisulfide DNCs had an r_1 of 22.4 mM^{-1} s^{-1}, 91 nm polydisulfide DNCs had an r_1 of 18.4 mM^{-1} s^{-1} and 59 nm polydisulfide DNCs had an r_1 of 11.7 mM^{-1} s^{-1}.

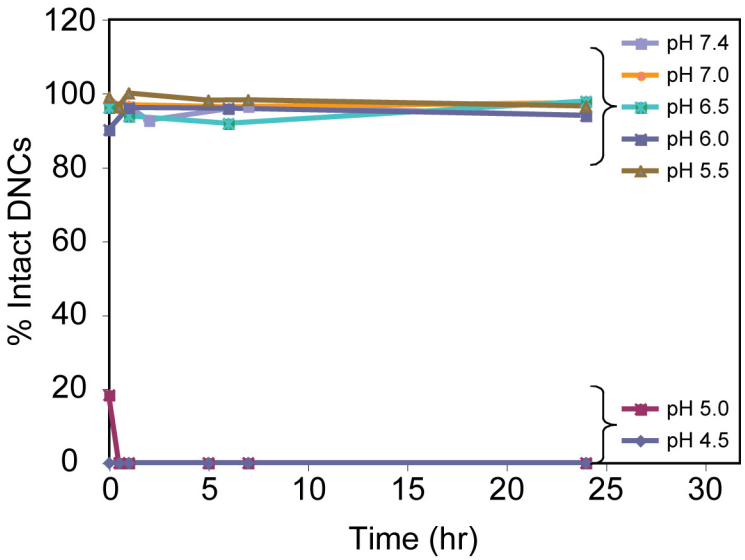

Figure S3. Stability of polydisulfide DNCs at various pH as a function of time. Polydisulfide DNCs (59 nm) were added in buffered solutions at various pH and the hydrodynamic diameter was measured over the course of 24 hours, by DLS.

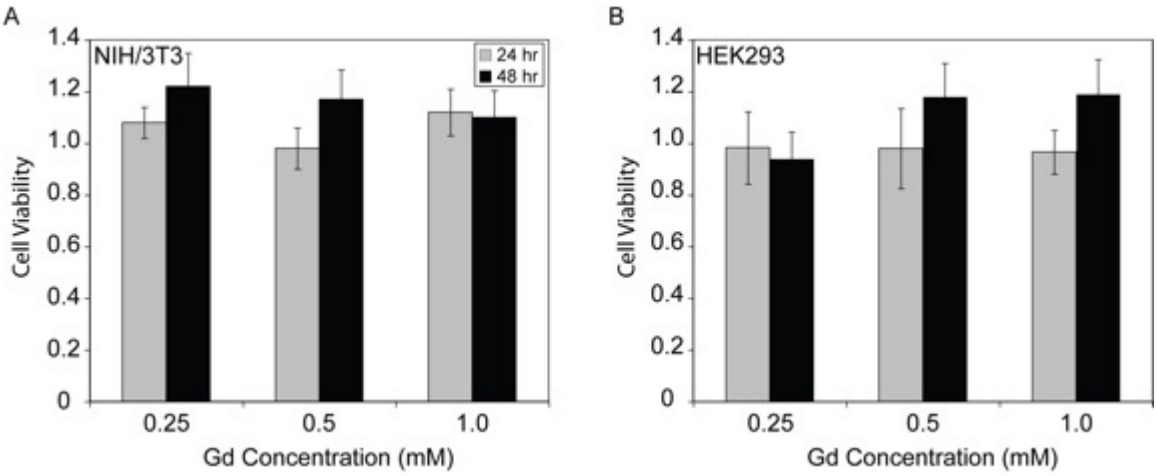

Figure S4. The cell viability of NIH/3T3 and HEK 293 cells following incubation with polydisulfide DNCs. Gd-labeled polydisulfide DNCs were incubated with NIH 3T3 and HEK 293 cells at various gadolinium concentrations for 24 h and 48 h. Cell viability was measured using an MTT assay and normalized to cells in the absence of any polydisulfide DNCs.

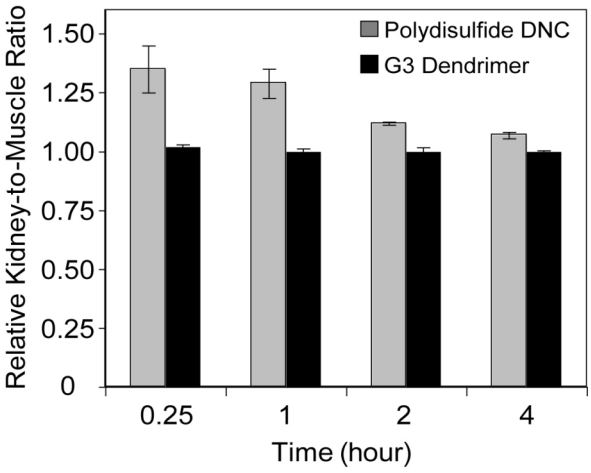

Figure S5. Quantitative analysis of DNC-enhanced MR images. The contrast-enhanced kidney-to-muscle (K:M) ratio was calculated from MR images of the kidney before and at various times following the injection of polydisulfide DNCs and PAMAM(G3)-[Gd-C-DOTA]$^{-1}$ into nu/nu mice (n=3 each). The relative kidney-to-muscle (rK:M) ratio was calculated as the quotient of the K:M ratio in post-contrast images and pre-contrast images.

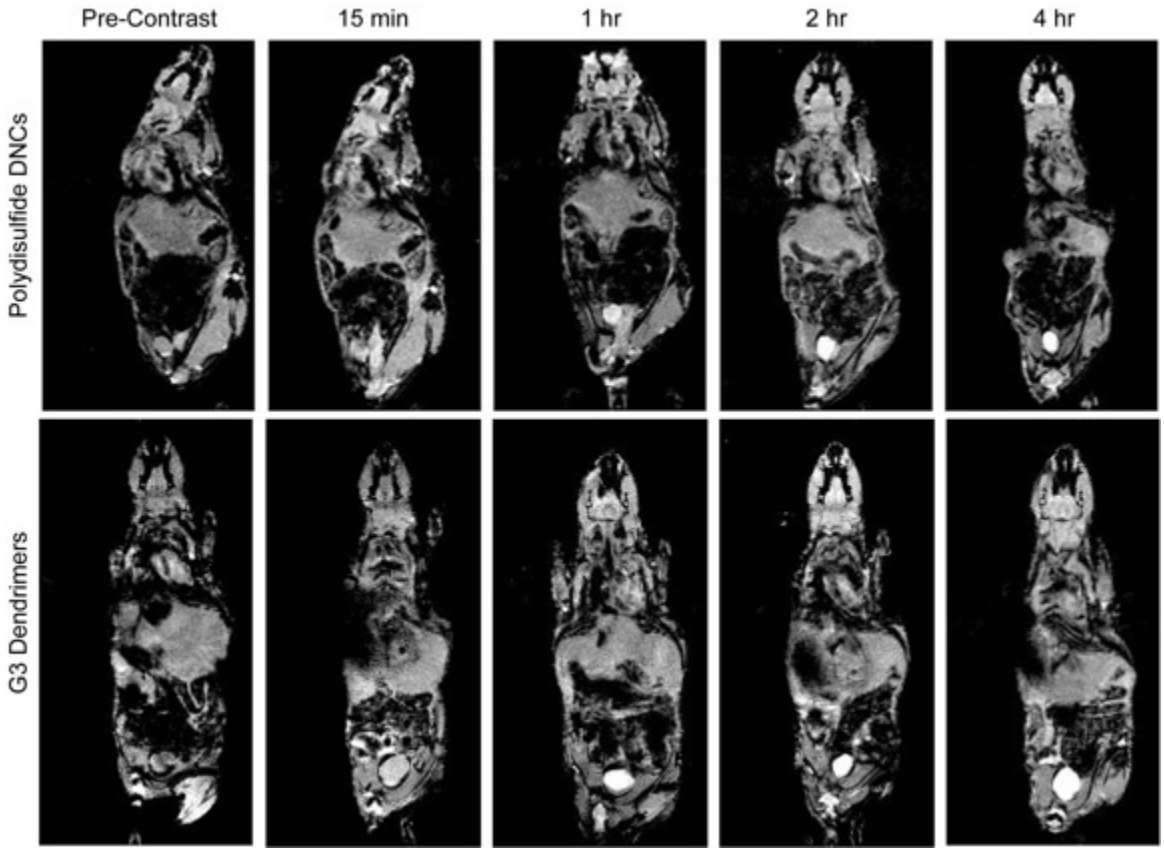

Figure S6. Magnetic resonance images of nu/nu nude mice at various time points after the tail vein injection of polydisulfide DNCs PAMAM(G3)-[Gd-C-DOTA]$^{-1}$. T_1-weighted mages of the bladder were acquired pre-injection and 15 mins, 1 h, 2 h, and 4 h post-injection. All images were acquired using a 4.7 T small animal horizontal bore Varian INOVA system.