Gadolinium-Functionalized Peptide Amphiphile Micelles for Multimodal Imaging of Atherosclerotic Lesions

Sang Pil Yoo¹, Federico Pineda², John C. Barrett¹, Christopher Poon^{3,4}, Matthew Tirrell¹,

Eun Ji Chung^{1,4}*

1 Institute for Molecular Engineering, University of Chicago, 5747 South Ellis Avenue, Chicago, IL, 60637, USA

2 Department of Radiology, University of Chicago, 5841 South Maryland Avenue, MC2026, Chicago, IL 60637, USA

3 Department of Chemistry, University of Chicago, 929 E. 57th Street, Chicago, IL 60637, USA 4 Current Affiliation: Department of Biomedical Engineering, University of Southern California, 1042 Downey Way, Los Angeles, CA 90089-1111, USA

Short title: Gadolinium-functionalized micelles for atherosclerosis

*Department of Biomedical Engineering University of Southern California 1042 Downey Way, Denney Research Center 140 Los Angeles, CA 90089-1111 Tel.: +1-213-740-2925 Fax: +1-213-821-3897 Email: <u>eunchung@usc.edu</u>

Supplemental Figures and Legends



Figure S1. MALDI/TOF mass spectrometry results of A) DSPE-PEG2000-DTPA-tbutyl and B) deprotected DSPE-PEG2000-DTPA.



Figure S2. TEM images with higher magnification displaying heterogeneous shapes with DTPA-BSA(Gd) micelles. A) CREKA/DTPA-BSA(Gd) and B) NT/DTPA-BSA(Gd). SB: 100 nm.



Figure S3. Dynamic light scattering data of DTPA-BSA(Gd) micelles. A second and larger population of particles are present for both A) CREKA (average diameter: 114.9 nm) and B) NT micelles (average diameter: 126.9 nm).



Figure S4. A) Chemical structure of DSPE-DTPA(Gd) and transmission electron micrographs of CREKA/DSPE-DTPA(Gd) show heterogeneous population of micelles consisting of B) spherical and C) cylindrical shapes. SB: 50 nm.



Figure S5. Total flux measurements obtained via optical imaging shows enhanced cy7 signal and targeting by CREKA/DSPE-PEG2000-DTPA(Gd).



Figure S6. Figure S4. Representative immunohistochemistry data confirms fibrin expression on the aortic walls of all mice (brown staining, arrows). A) Low magnification, B-D) high magnification of CREKA/DSPE-PEG2000-DTPA(Gd). SB: 100 μ m (A), 75 μ m (B-D).