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Amit K. Saha, Shatha F. Dallo, Ariana L. Detmar, Pawel Osmulski, Maria Gaczynska, Tim Hui-Ming Huang, Anand K. Ramasubramanian



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## Cellular cholesterol regulates monocyte deformation

Amit K. Saha<sup>a</sup>, Shatha F. Dallo<sup>a</sup>, Ariana L. Detmar<sup>a</sup>, Pawel Osmulski<sup>b</sup>, Maria Gaczynska<sup>b</sup>, Tim Hui-Ming Huang<sup>b</sup>, Anand K. Ramasubramanian<sup>c\*</sup>

<sup>a</sup>Department of Biomedical Engineering, The University of Texas at San Antonio, San Antonio, Texas, United States of America

<sup>b</sup>Department of Molecular Medicine, The University of Texas Health Science Center at San Antonio, San Antonio, Texas, United States of America

<sup>c</sup>Department of Biomedical, Chemical and Materials Engineering, San José State University, San José, California, United States of America

\*Correspondence to: Department of Biomedical, Chemical and Materials Engineering, San José State University, CA 95192-0082, USA. Tel.: +1 (408) 924-3922.

anand.ramasubramanian@sjsu.edu

### Abstract

The role of cholesterol content on monocyte biomechanics remains understudied despite the well-established link between cholesterol and monocytes/macrophages in atherosclerosis, and the effect on other cell types. In this work, we have investigated the effect of cholesterol on monocyte deformability and the underlying molecular mechanisms. We altered the baseline cholesterol in human monocytic cell line THP-1, and investigated the changes in monocyte deformability using a custom microfluidic platform and atomic force microscopy. We observed that the cholesterol depletion lowered deformability while enrichment increased deformability compared to untreated cells. As a consequence of altered

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