



**Exponent<sup>®</sup>**  
Engineering & Scientific Consulting

## Andrea Acuna, Ph.D.

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### Professional Profile

Dr. Acuna's background is in biomedical engineering with a focus on soft tissue biomechanics, particularly in the development of tools and techniques for the evaluation of mechanical properties and composition. She has extensive experience in experimental design, soft tissue dissection, preparation, sterile surgical techniques, and testing to acquire quasi-static mechanical properties.

Dr. Acuna has expertise in immunohistochemical methods and image acquisition and analysis, ranging from 3D confocal to non-invasive live animal ultrasound. Dr. Acuna has experience in image processing using both commercially available and custom software and is proficient in FIJI/ImageJ, SolidWorks and MATLAB.

Prior to joining Exponent, Dr. Acuna obtained her doctorate from Purdue University. Her dissertation work focused on developing experimental and computational methodologies to investigate the 3D organization and mechanical behavior of extracellular matrix proteins synthesized in vivo, particularly in tendon and other musculoskeletal tissues.

### **Presentations**

Acuna A, Jimenez JM, Calve S. Characterization of the macroscale and mesoscale mechanics of the extracellular matrix in developing tendons. Lighting talk. Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C), virtual, 2020.

Acuna A, Jimenez JM, Calve S. Evaluating in situ extracellular matrix strain under tension. Podium presentation. 56th Annual Technical Meeting - Society of Engineering Science, St. Louis, MO, 2019.

Acuna A, Goergen CJ, Calve S. In situ measurement of native extracellular matrix strain. Poster presentation, 8th World Congress of Biomechanics. Dublin, Ireland, 2018.

Acuna A, Drakopoulos MA, Sather BJ, Goergen CJ, Calve S. In situ characterization of native extracellular matrix fibril deformation. Podium presentation. Summer Biomechanics, Bioengineering, and Biotransport Conference (SB3C), Tucson, AZ, 2017.

Acuna A, Drakopoulos MA, Sather BJ, Goergen CJ, Calve S. Measurement of displacement fields of native extracellular matrix fibrils loaded in situ. Podium presentation. Biomedical Engineering Society (BMES) Annual Meeting, Minneapolis, MN, 2016.

## Academic Credentials & Professional Honors

Ph.D., Biomedical Engineering, Purdue University, 2020

B.S., Biomedical Engineering, University of Arizona, 2015

Tau Beta Pi – Engineering Honor Society

## Prior Experience

Graduate Research Assistant, Purdue University, 2015-2020

R&D Graduate Intern, Target Expression Imaging & Histopathology - Amgen, 2018

## Professional Affiliations

Biomedical Engineering Society (BMES)

Society of Hispanic Professional Engineers (SHPE)

## Languages

Spanish

## Publications

Jacobson KR, Lipp S, Acuna A, Leng Y, Bu Y, Calve S. Comparative Analysis of the Extracellular Matrix Proteome Across the Myotendinous Junction. Journal of Proteome Research 2020.

Acuna A, Sofronici SH, Goergen CJ, Calve S. In Situ Measurement of Native Extracellular Matrix Strain. Experimental Mechanics 2019; 59 (9):1307-1321.

Sangha GS, Busch A, Acuna A, Berman AG, Phillips EG, Trenner M, Eckstein H, Maegdefessel L, Goergen CJ. Effects of Iliac Stenosis on Abdominal Aortic Aneurysm Formation in Mice and Humans. Journal of Vascular Research 2019; 56 (5):217-229.

Acuna A, Drakopoulos MA, Leng Y, Goergen CJ, Calve S. Three-dimensional visualization of extracellular matrix networks during murine development. Developmental Biology 2018; 435 (2):122-129.

Acuna A, Berman AG, Damen FW, Meyers BA, Adelsperger AR, Bayer KC, Brindise MC, Bungart B, Kiel AM, Morrison RA, Muskat JC, Wasilczuk KM, Wen Y, Zhang J, Zito P, Goergen CJ. Computational Fluid Dynamics of Vascular Disease in Animal Models. Journal of Biomechanical Engineering 2018; 140 (8): 0808011–08080114

## Peer Reviews

Experimental Mechanics