



Exponent[®]
Engineering & Scientific Consulting

Juan Jose Paredes, Ph.D.

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Professional Profile

Dr. Paredes' expertise is in biomechanics and tissue engineering with specialization in orthopedic soft tissue pathology and tendon therapeutic development. He has extensive experience with tendon micro-surgical techniques in small animal models, and the assessment/characterization of both acute and chronic tendon injuries.

Additionally, Dr. Paredes has experience with the optimization and implementation of biomaterial scaffolds as vehicles for on demand therapeutic delivery. Dr. Paredes has also developed novel protocols for the use of multi-photon microscopy to temporally analyze micro-structural damage and diagnose early disease progression of tendinopathies. Furthermore, his expertise lies in the design and application of innovative instrumentation and clamping systems for viscoelastic and elastic mechanical testing at multiple scales. He is proficient with tissue dissection, processing, staining, and imaging (via bright-field, fluorescence, confocal, and multiphoton microscopy) necessary for immunohistochemical assessment. He also has experience with the design and implementation of organ culture bioreactors, and has worked with image processing and segmentation analysis.

Prior to joining Exponent, Dr. Paredes received his Ph.D. in Biomedical Engineering from Cornell University. His research focused on utilizing principles from regenerative medicine to encourage improved healing of musculoskeletal soft tissues such as tendons. Utilizing a naturally occurring model of regeneration, he identified the structural and compositional matrix environment that could be used as a template to drive scarless tendon healing in normal healing models. Additionally, he designed, validated and executed a novel organ-culture system for the isolation and manipulation of tendon specific remodeling mechanisms following injury. Finally, during his time at Cornell, Dr. Paredes translated his findings towards therapeutic advances and developed an innovative therapeutic-hydrogel system to improve the structural and functional healing response of normal healing tendons after acute midsubstance injuries in-vivo. In addition to his research, Dr. Paredes worked closely with the Diversity Programs in Engineering department and was a teaching assistant for Statics and Mechanics of Solids.

Academic Credentials & Professional Honors

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

M.S., Biomedical Engineering, Cornell University, 2018

B.S., Biomedical Engineering, University at Buffalo, 2015

Licenses and Certifications

NAMSA ISO 10993 Series 1 Biocompatibility Testing, Evaluation and Risk Management

Professional Affiliations

Orthopedic Research Society (ORS)

Publications

Paredes J, Pekmezian A, Andarawis-Puri N. MRL/MpJ tendon matrix derived therapeutic promotes improved healing outcomes in scar-mediated canonical tendon healing. *Journal of Orthopedic Research*. 2020 (In-Press).

Paredes J, Marvin JC, Vaughn B, Andarawis-Puri N. Innate tissue properties drive improved tendon healing in MRL/MpJ and harness cues that enhance behavior of canonical healing cells. *FASEB J*. 2020;10.1096.

Paredes J, Shiovitz DA, Andarawis-Puri N. Uncorrelated healing response of tendon and ear injuries in MRL highlight a role for the local tendon environment in driving scarless healing. *Connect Tissue Res*. 2018;59(5):472-482.

Paredes JJ, Andarawis-Puri N. Therapeutics for tendon regeneration: a multidisciplinary review of tendon research for improved healing. *Ann N Y Acad Sci*. 2016;1383(1):125-138.

Presentations

Paredes, JJ; Pekmezian, A; Andarawis-Puri, N. MRL/MpJ tendon matrix derived therapeutic promotes improved healing outcomes in scar-mediated canonical tendon healing. Orthopedic Research Society. Poster Presentation. 2020.

Paredes JJ, Pekmezian Ashley and Andarawis-Puri Nelly. Role of the extracellular matrix in adult mammalian tendon regeneration. Cornell Seminar Series, Ithaca, NY. Podium Talk. 2018.

Paredes JJ and Andarawis-Puri N. Scarless healing cascade initiates early in injured MRL/MpJ tendons. Orthopedic Research Society, New Orleans, LA. Podium talk. 2018.

Paredes Juan, Carballo Camila, Lebaschi Amir, Andarawis-Puri Nelly, Dr. Scott Rodeo. Development of a mouse chronic patellar tendinopathy model utilizing multi-photon microscopy to analyze microstructural damage. Hospital for Special Surgery Immersion Symposium, Ithaca, NY. Poster. 2016.