

CURRICULUM VITAE

JULIA QUINLAN

WORK CONTACT INFORMATION

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EDUCATION

- 2016** **PhD, Bioengineering**, concentration in Biomechanics, focus on degenerative changes in intervertebral disc using animal models
Dissertation: Effect of Binge Alcohol Exposure on Intervertebral Disc Structure and Mechanical Properties in Adult Rats
University of Illinois-Chicago, Chicago, IL
- 2007** **MSc, Biomedical Engineering**, concentration in Biomedical Engineering, minor in Mechanical Engineering
Thesis: Ambient Intelligence Tools Applied in Everyday Activities in the Home Environment
The Technical University of Košice (TUKE), Slovakia
- 2006** **Exchange Student**, spring semester, Socrates-Erasmus Program, Biomedical Engineering
Ghent University, Ghent, Belgium

RESEARCH EXPERIENCE

- 2016-Present** **Post-doctoral Fellow**, supported by National Institute on Disability, Independent Living, and Rehabilitation Research (NIDILRR) Advanced Rehabilitation Research and Training (ARRT) Program, NUPOC (Northwestern University Prosthetics-Orthotics Center), Department of Physical Medicine and Rehabilitation, Feinberg School of Medicine, Northwestern University
- Research Engineer for [No Longer Smooth: Introducing Striations into Prosthetic Socket Construction to Improve Suspension, Rotation, Fit and Comfort](#) (Principal Investigator Stefania Fatone, PhD, BPO(Hons), funded by the Office of the Assistant Secretary for Health Affairs, through the Neuromusculoskeletal Injuries Research Award under Award No. W81XWH-16-1-0485). The project examines the effect of different types of texturing on suspension, rotation, fit, and comfort; and specifically tests to determine if horizontal striations improve suspension and if vertical striations help control transverse plane rotation for transtibial sockets.
- 2008-2016** **Research Assistant**, Musculoskeletal Biomechanics Research Laboratory, Edward Hines Jr. Veterans Affairs Hospital, Hines, IL
- Conducted spine biomechanics and general orthopedics research: Experimental testing included Range of Motion experiments and orthopedic medical device testing on human cadaveric specimens; sample preparation, dynamic/clinical X-ray, pQCT, motion analysis,

follower load technique; tested rodent spines, in vitro MRI testing and evaluation, pQCT testing of bone density measurements.

- Developed, designed and fabricated custom mechanical testing apparatus for the compression/torsion loading of the rat spine to study intervertebral disc degeneration.
- Designed 20+ apparatuses using SOLIDWORKS®; manufactured equipment to meet requirements of various biomechanics projects funded by orthopedic/spine device companies, NIH Grants and Department of Veterans' Affairs.

WORK EXPERIENCE

2014-2015 **Graduate Assistant, Technology Commercialization Analyst, UIC Office of Technology Management, Chicago, IL**

- Participated in multiple aspects of the technology commercialization process, focused on screening new invention disclosures from UIC College of Medicine portfolio and evaluated the commercial landscape. Gained valuable technology management and evaluation experience and exposure to some of UIC's most exciting technologies.
- Searched for potential commercialization markets, conducted searches of existing patents, academic articles, and evaluated discoveries according to stage of development. Used web-based business and scientific databases, and library tools to collect data necessary to complete the patentability research.

Fall 2014 **Consultant, Innovate@UIC** launched from EnterpriseWorks Chicago/ UIC Office of Technology Management/ IllinoisVENTURES

- Worked in teams on the proof of concept phase to determine market feasibility, validation, competitive landscape, and the best outcome for a specific technology.
- With support and guidance of venture coordinators, worked with seasoned executives and in-residence entrepreneurs to outline a commercialization roadmap; define milestones; move promising technology toward successive decision points; and accelerate commercialization. The program provides graduate students, post-doctoral fellows, and inventors a structured and methodical approach to commercializing new technologies.

TEACHING EXPERIENCE

2007-2008 **Teaching Assistant, Senior Design I and II** Led student team progress, trained undergraduates in mechanical engineering skills (drawings, CAD, manufacturing operation in UIC manufacturing lab), participated in individual experimental design, and graded exams.

2008-2013 **Teaching Assistant, Biomechanics** Taught undergraduate and graduate students subjects involving ligaments and soft tissue mechanics, bone and hard tissue mechanics.

SKILLS

1. **Software Skills:** MS Office Suite, SAS, MATLAB®, Materialise Mimics®, 3Matic®, Microsoft Visio, CorelDraw; SOLIDWORKS®, Pro/ENGINEER, AutoCAD®, EndNote®
2. **Motion Analysis:** Optotrak Certus®
3. **Unique BME Lab and Clinical Skills:** TestPoint™, National Instruments LabVIEW, Instron Bluehill®, MTS TestWorks®; clinical X-ray operation, XCT software for pQCT scanning, MRI

scanning and image analysis, biomechanical testing, human cadaveric testing, and animal testing.

4. **Basic Industrial Skills:** Using metal cutting machinery, milling machines, drilling machines, and soldering.

HONORS & AWARDS

- 2007** **Dean's Award for Outstanding Graduate Student**, Department of Mechanical Engineering, The Technical University of Košice (TUKE), Slovakia
- 2008-2016** **Soccer**, multiple championships playing in intramural co-ed soccer, UIC

SCIENTIFIC MEMBERSHIP

- 2017** Member, Midwest Chapter of the American Academy of Orthotists & Prosthetists (MWCAAOP)
- 2015** Member, The American Association for the Advancement of Science (AAAS)
- 2012** Member, American Society of Mechanical Engineers (ASME)
- 2011** Member, Institute of Electrical and Electronics Engineers (IEEE)
- 2012** Member, The Society of Women Engineers (SWE)

SERVICE & OUTREACH

- 2012** **Reviewer**, Bioengineering Student Journal, UIC
- 2015** **Volunteer**, Ginkgo Organic Gardens, a community garden responding to local hunger and providing fresh produce to Vital Bridges' GroceryLand, a food pantry that serves low-income persons living with AIDS

PUBLICATIONS & PEER-REVIEWED JOURNAL ARTICLES

1. **Quinlan J**, Tran L, Yohay J, Poziembo B, Fatone S. [Mechanical Testing of Textured Prosthetic Sockets Provides Insight on Improving Suspension](#). Journal of Prosthetics and Orthotics, 30(S2):39, 2018.
2. Voronov L, Vastardis G, **Zelenakova J**, Carandang G, Havey R, Waldorff E, Zindrick M, Patwardhan A. Biomechanical Characteristics of an Integrated Lumbar Interbody Fusion Device. International Journal of Spine Surgery. Volume 8, 2014.
3. Wojewnik B, Ghanayem A, Tsitsopoulos P, Voronov L, Potluri T, Havey R, **Zelenakova J**, Patel A, Carandang G, Patwardhan A. Biomechanical evaluation of a low profile, anchored cervical interbody spacer device in the setting of progressive flexion-distraction injury of the cervical spine. Eur Spine J. Epub 2012 Aug 1.
4. Tsitsopoulos P, Wojewnik B, Voronov L, Havey R, Renner S, **Zelenakova J**, McIntosh B, Carandang G, Abjornson C, Patwardhan A. Effect of Prosthesis Endplate Lordosis Angles on L5-S1 Kinematics after Disc Arthroplasty. Eur Spine J. 2012 Jun; 21 Suppl 5:585-91. Epub 2012 Apr 4.
5. Zelenakova J, Viewing Intervertebral Disc Properties of Rodent Animals through Morphology and MRI, UBSJ, 2012.
6. Voronov L, Patwardhan A, Gossel L, Tsitsopoulos P, Wharton N, Potluri T, **Zelenakova J**, Carandang G, Newman P, Hannon S, Schatz C, Havey R. Kinematics of the L5-S1 and L4-L5 Segments After Reconstruction Using a Compressible Lumbar Disc Prosthesis. Spine J. 2011 Oct.

7. Fry R, Alamin T, Voronov L, Fielding L, Ghanayem A, Parikh A, Carandang G, McIntosh B, **Zelenakova J**, Havey R, Patwardhan A. Increasing Compressive Preload Reduces the Segmental Instability Produced by Progressive Destabilization. *Spine J*. 2009 Oct 31.

CONFERENCE ABSTRACTS & PRESENTATIONS

1. **Quinlan J**, Tran L, Yohay J, Poziembo B, Fatone S. The Effect of Prosthetic Socket Texturing on Suspension. 14th Annual Lewis Landsberg Research Day, Northwestern University, April 5, 2018, Chicago, IL.

2. **Quinlan J**, Tran L, Yohay J, Poziembo B, Fatone S. Mechanical Testing of Textured Prosthetic Sockets Provides Insight on Improving Suspension. 2018 NUPOC Biennial Symposium, March 13, 2018, Northwestern University, Chicago, IL.

3. **Quinlan J**, Tran L, Yohay J, Poziembo B, Fatone S. Mechanical Testing of Textured Prosthetic Sockets Provides Insight on Improving Suspension. American Academy of Orthotists & Prosthetists Meeting, February 14-17, 2018, New Orleans, LA.

4. **Quinlan J**, Tran L, Yohay J, Poziembo B, Fatone S. The Effect of Prosthetic Socket Texturing on Socket Suspension Using Mechanical Loading. Midwest Chapter American Academy of Orthotists & Prosthetists Fall One Day Education Symposium 2017, November 11, 2017, Chicago, IL.

5. Liu Y, **Zelenakova J**, Cai K, Kleps R, Royston T, Magin R, Larson A, Li W. Assessment of the stiffness of intervertebral disk in rat model with Magnetic Resonance Elastography. Joint Annual Meeting ISMRM-ESMRMB, June 1, 2015, Toronto, Ontario, Canada.

6. Voronov L, Havey R, Vastardis G, **Zelenakova J**, Carandang G, Muriuki M, Patwardhan A. Biomechanical Evaluation of Interspinous Fixation System in Different Fusion Constructs: Laboratory Investigation. Congress of Neurological Surgeons, October 18-22, 2014, Boston, MA.

7. Voronov LI, Havey RM, Vastardis G, Carandang G, **Zelenakova J**, Abjornson C, Patwardhan AG. Integrated interbody fusion device in a 2-level cervical construct: biomechanical evaluation. ISASS Annual Meeting, April 30-May 2, 2014, Miami, FL.

8. Voronov L, Havey R, Vastardis G, **Zelenakova J**, Carandang G, Muriuki M, Patwardhan A. Spinous Process Clamp in Cadaveric Specimens: Biomechanical Comparison of Fusion Constructs. American Association of Neurological Surgeons Annual Meeting, San Francisco, CA, April 5-9, 2014.

9. Zindrick M, Vastardis G, Voronov L, **Zelenakova J**, Potluri T, Carandang G, Waldorff E, Havey R, Patwardhan A. Biomechanical Characteristics of an Integrated Lumbar Interbody Fusion Device. American Association of Neurological Surgeons Annual Meeting, San Francisco, CA, April 5-9, 2014.

10. Voronov LI, Havey RM, Vastardis G, Carandang G, **Zelenakova J**, Abjornson C, Patwardhan AG. Integrated Interbody Fusion Device in a 2-Level Cervical Construct: Biomechanical Evaluation. American Association of Neurological Surgeons Annual Meeting, San Francisco, CA, April 5-9, 2014.

11. Havey R, Muriuki M, Carandang G, Vastardis G, **Zelenakova J**, Voronov L, Patwardhan A. Neuroforaminal Assessment During Dynamic Flexion Extension Range of Motion. Orthopedic Research Society Annual Meeting, New Orleans, LA, March 15-18, 2014.

12. **Zelenakova J**, Havey R, Voronov L, Patwardhan A. Development of Biomechanical Testing Apparatus for Testing of Rodent Spines under Combined Loads. UIC Student Research Forum, April 8, 2014, Chicago, IL.

13. Voronov L, Havey R, Vastardis G, Carandang G, Potluri T, **Zelenakova J**, Abjornson C, Patwardhan A. Lag-design integrated cervical interbody fusion device with lag screws. Congress of Neurological Surgeons Annual Meeting, October 19-23, 2013, San Francisco, CA.
14. Patwardhan A, Tsitsopoulos P, Potluri T, **Zelenakova J**, Carandang G, Phillips F, Zindrick M, Ghanayem A, Havey R, Voronov L. Effect of pll resection on the stability of cervical disc arthroplasty. Spine Society of Australia Annual Meeting, Australia, April 19-21, 2013.
15. Voronov L, Havey R, Vastardis G, Carandang G, Potluri T, **Zelenakova J**, Abjornson C, Patwardhan A. Biomechanical characteristics of an integrated cervical interbody fusion device. Spine Society of Australia Annual Meeting, Australia, April 19-21, 2013.
16. Patwardhan A., Tsitsopoulos P, Potluri T, Hannon S, **Zelenakova J**, Carandang G, Phillips F, Zindrick M, Ghanayem A, Havey R, Voronov L. Does PLL Resection Affect the Stability of Cervical Disc Arthroplasty? Cervical Spine Research Society Annual Meeting, Chicago, IL, December 6-8, 2012.
17. **Zelenakova J**. Development of Material Testing Apparatus for In Vitro Biomechanical Testing of Rodent Spines under Combined Loads, OMTEC, June 12-13, 2012, Chicago, IL
18. Patwardhan A, Voronov L, Tsitsopoulos P, Potluri T, Hannon S, **Zelenakova J**, Carandang G, Phillips F, Zindrick M, Ghanayem A, Havey R. Effect of PLL Resection on TDR Kinematics: To Cut or Not to Cut. [Submitted to International Society for the Advancement of Spine Surgery (ISASS) Annual Meeting, March 20-23, 2012, Barcelona, Spain].
19. Tsitsopoulos P, Voronov L, Ghanayem A, Zindrick M, Lee D, Potluri T, **Zelenakova J**, Carandang G, Havey R, Patwardhan A. Anterior cervical discectomy and instrumentation with stand-alone cages, static and rotational-dynamic plates: A biomechanical analysis and comparison. 14th European Congress of Neurosurgery, Rome, Italy, October 9-14, 2011.
20. Wojewnik B, Ghanayem A, Tsitsopoulos P, Voronov L, Potluri T, Havey R, **Zelenakova J**, Carandang G, Patwardhan A. Biomechanical Evaluation of Low Profile, Anchored Cervical Interbody Spacer Device in the Setting of Cervical Flexion Distraction Injury. Mid-America Orthopaedic Association, Tucson, AZ, April 6-10, 2011.
21. Wojewnik B, Ghanayem A, Tsitsopoulos P, Voronov L, Potluri T, Havey R, **Zelenakova J**, Carandang G, Patwardhan A. Biomechanical Evaluation of a Low Profile, Anchored Cervical Interbody Spacer Device in the Setting of Progressive Flexion-Distraction Injury. Cervical Spine Research Society, Charlotte, NC, December 2-4, 2010.
22. Tsitsopoulos P, Wojewnik B, Voronov L, Havey R, McIntosh B, **Zelenakova J**, Carandang G, Renner S, Abjornson C, Patwardhan A. Effect of Prosthesis Endplate Lordosis Angles on the Kinematics of the L5-S1 Segment After Total Disc Arthroplasty. Spine Arthroplasty Society Annual Meeting, New Orleans, LA, April 27-30, 2010.
23. Fry R, Alamin T, Voronov L, Fielding L, Ghanayem A, Parikh A, Carandang G, McIntosh B, **Zelenakova J**, Havey R, Patwardhan A. Increasing Compressive Preload Reduces the Segmental Instability Produced by Progressive Destabilization. North American Spine Society, San Francisco, CA, November 10-14, 2009.
24. Dimitriadis A, Voronov L, Renner S, Carandang G, Havey R, Macintosh B, **Zelenakova J**, Gilbride C, Patwardhan A. Effect of Implant Placement Variability in the Sagittal Plane on Three-dimensional Motion Response of Cervical Total Disc Replacement using a Mobile-core Disc Prosthesis. Spine Arthroplasty Society Annual Meeting, London, England, Apr. 28-May 1, 2009.