

Rouzbeh Amini

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EDUCATION

- University of Pittsburgh, Pittsburgh, PA** 09/13
NIH NRSA Post Doctoral Fellow in Bioengineering, Advisor: Michael S. Sacks
Research Focus on Cardiovascular Tissue Biomechanics
- University of Minnesota, Minneapolis, MN** 06/10
PhD in Biomedical Engineering, Advisor: Victor H. Barocas
Thesis: "Iris Biomechanics in Health and Disease"
- Northeastern University, Boston, MA** 09/05
MS in Mechanical Engineering, Advisor: Grant M. Warner
Thesis: "Natural Frequency Analysis of Liquid-filled Tanks"
- Sharif University of Technology, Tehran, Iran** 09/01
BS in Mechanical Engineering
Thesis: "Computational Exploration of Forces and Moments Applied to Human Joints"

APPOINTMENTS

- The University of Akron, Akron, OH** 08/13-present
Department of Biomedical Engineering
Assistant Professor
Research Focus on Soft Tissue Biomechanics
- University of Pittsburgh, Pittsburgh, PA** 09/11-08/13
Department of Bioengineering
National Institute of Health Ruth L. Kirschstein National Research Service Award Postdoctoral Fellow
- University of Pittsburgh, Pittsburgh, PA** 09/10-09/11
Department of Bioengineering
Postdoctoral Associate
- University of Minnesota, Minneapolis, MN** 09/05-08/10
Department of Biomedical Engineering
Graduate Research Assistant
- Northeastern University, Boston, MA** 01/04-09/05
Department of Mechanical and Industrial Engineering
Graduate Research Assistant

AWARDS AND HONORS

- Firestone Research Initiative Fellowship Awards 2014
- NIH Ruth L. Kirschstein NRSA Postdoctoral Fellowship (NHLBI-F32) 2011-2013
- Royal Society Newton International Fellowship (Awarded, but Declined) 2010
- Whitaker International Scholarship (Awarded, but Declined) 2010
- ASME SBC 2009 – 1st Place (Biofluids and Biotransport Poster Presentation) 2009

- Life Science Alley Conference - Poster Session Winner (Medical School Award) 2008
- University of Minnesota Doctoral Dissertation Fellowship 2008-2009
- Phi Kappa Phi 2005

JOURNAL PUBLICATIONS

1. Amini-Khoiy, K; Bsiwas, D; Decker, TN; Asgarian, KT; Loth, F; **Amini, R***; (2016) "Surface Strains of Porcine Tricuspid Valve Septal Leaflets Measured in Ex-vivo Beating Hearts." *J Biomech Eng, In Review*[†].
2. Amini-Khoiy, K; **Amini, R***; (2016) "On the Biaxial Mechanical Properties of Porcine Tricuspid Valve Leaflets." *J Biomech Eng, In Revision*.
3. Gsellman, LA; **Amini, R***; (2016) "Patients with Intravitreal Gas Bubbles at Risk of High Intraocular Pressure without Exceeding Elevation of Surgery: Theoretical Analysis." *Invest Ophthalmol Vis Sci, In Press*.
4. Hobson, CM; Amoroso, NJ; **Amini, R**; Ungchusri, EN; Hong, Y; D'Amore, A; Sacks, MS; Wagner, WR; (2015) "Fabrication of Elastomeric Scaffolds with Curvilinear Fibrous Structures for Heart Valve Leaflet Engineering." *J Biomed Mater Res A*, 103(9):3101-3106.
5. Barone, WR; **Amini, R**; Maiti, S; Moalli, PA; Abramowitch, SD; (2015) "The Impact of Boundary Conditions on Surface Curvature of Polypropylene Mesh in Response to Uniaxial Loading." *J Biomech*, 48(9):1566-1574.
6. Pierlot, CM; Lee, JM; **Amini, R**; Sacks, MS; Wells, SM; (2014) "Pregnancy-Induced Remodeling of Collagen Architecture and Content in the Mitral Valve." *Ann Biomed Eng*, 42(10): 2058-2071.
7. **Amini, R***; Voycheck, CA; Debski, RE; (2014) "A Method for Predicting Collagen Fiber Realignment in Non-planar Tissue Surfaces as Applied to Glenohumeral Capsule during Clinically Relevant Deformation." *J Biomech Eng*, 136(3): 031003.
8. Fata, B; Zhang, W; **Amini, R**; Sacks, MS; (2014) "Insights into Regional Adaptations in the Regional Pulmonary Artery Using Meso-scale Structural Model: Effects of Ascending Aorta Impingement." *J Biomech Eng*, 136(2): 021009.
9. Lee, CH; **Amini, R**; Gorman, RC; Gorman, JH; Sacks, MS; (2013) "An Inverse Modeling approach for Stress Estimation in Mitral Valve Anterior Leaflet Valvuloplasty for In-vivo Valvular Biomaterial Assessment." *J Biomech*, 47 (9): 2055-2063.
10. Lee, CH; Oomens, PJ; Rabbah, JP; Yoganathan, A; Gorman, RC; Gorman, JH; **Amini, R**; Sacks, MS; (2013) "A High-Fidelity and Micro-anatomically Accurate 3D Finite Element Model for Simulations of Functional Mitral Valve." *Lect Notes Comp Sci*, 7945:416-424.
11. Jouzdani, S; **Amini, R**; Barocas, VH; (2013) "Contribution of Different Anatomical and Physiological Factors to the Iris Contour and Anterior Chamber Angle changes during Pupil Dilation." *Invest Ophthalmol Vis Sci*, 54 (4):2977-2984.
12. **Amini, R**; Eckert, CE; Koomalsingh, K; Minakawa, M; Gorman, JH; Gorman, RC; Sacks, MS; (2012) "On the In-vivo Deformation of the Mitral Valve Anterior Leaflet: Effects of Annular Geometry and Referential Configuration." *Ann Biomed Eng*, 40(7):1455-1467.
13. **Amini, R**; Jouzdani, S; Barocas, VH; (2012) "Increased Iris-lens Contact Following Spontaneous Blinking: Mathematical Modeling." *J Biomech*, 45(13):2293-2296.
14. **Amini, R**; Whitcomb, JE; Al-Qaisi, MK; Akkin, T; Jouzdani, S; Dorairaj, S; Prata, T; Ilitchev, E; Liebmann, J; Ritch, R; Barocas, VH; (2012) "The Posterior Location of the Dilator Muscle Induces Anterior Iris Bowing during Dilation Even in the Absence of Pupillary Block." *Invest Ophthalmol Vis Sci*, 53(3):1188-94.
15. Whitcomb, JE; **Amini, R**; Simha, N; Barocas, VH; (2011) "Anterior-Posterior Asymmetry in Iris Mechanics Measured by Indentation." *Exp Eye Res*, 39(4):475-481.

* Corresponding author

† Invited manuscript

16. **Amini, R[‡]**; Barocas, VH; Kavehpour, HP; Hubschman, JP; (2011) “Computational Simulation of Altitude-change-induced Intraocular Pressure Alteration in Patients with Intravitreal Gas Bubbles.” *Retina*, 31(8): 1656-1663.
17. Powell, TA; **Amini, R**; Oltean, A; Barnett, V; Segal, Y; Barocas, VH; (2010) “Elasticity of the Lens Capsule as Measured by Osmotic Swelling.” *J Biomech Eng*, 132(9): 091008.
18. **Amini, R**; Whitcomb, JE; Prata, T; Dorairaj, S; Liebmann, J; Ritch, R; Barocas, VH; (2010) “Quantification of Iris Concavity.” *J Ophthalmic Vis Res*, 5(3): 211-2.
19. **Amini, R**; Barocas, VH; (2010) “Reverse Pupillary Block Slows Iris Contour Recovery from Corneoscleral Indentation.” *J Biomech Eng*, 132(7): 071010.
20. **Amini, R**; Barocas, VH; (2009) “Anterior Chamber Angle Opening during Corneoscleral Indentation: the Mechanism of Whole Eye Globe Deformation and the Importance of the Limbus.” *Invest Ophthalmol Vis Sci*, 50(11): 5288-9.

Impact factor for the year 2014 for some of the most frequently appearing journals in the above list[§]:

• Annals of Biomedical Engineering	3.195
• Experimental Eye Research	2.709
• Investigative Ophthalmology & Visual Science	3.404
• Journal of Biomechanical Engineering	1.780
• Journal of Biomechanics	2.751
• Retina	3.243

PODIUM PRESENTATIONS**

21. Gsellman, LA; **Amini, R**; “Intraocular Pressure Increases In Patients with Intraocular Gas Bubbles Following A Descent and Subsequent Ascent”. 2015 Summer Biomechanics, Bioengineering, and Biotransport Conference, June 17-20, Snowbird, UT.
22. Pant, AD; **Amini, R**; “A Genetic Algorithm-based Optimization Technique To Estimate Iris Mechanical Properties”. 2015 Midwest American Society of Biomechanics Regional Meeting, February 17-18, 2015, Akron, OH.
23. Barone, WR; **Amini, R**; Maiti, S; Moalli PA; Abramowitch SD; “Biomechanical Factors That Dictate Local Mesh Burden of Prolapse Mesh”. 7th World Congress in Biomechanics, July 6-11, 2014, Boston, MA.
24. Bishop, PD; Perry, K; **Amini, R**; Loth, F; “Cross Sectional Perimeter Analysis Following Aortic Valve Replacement”. 2014 Midwest American Society of Biomechanics Regional Meeting, March 4-5, 2014, Akron, OH.
25. Lee, CH; Gorman, JH; Gorman, RC; **Amini, R**; Sacks, MS; “A micro-anatomically accurate finite element model for investigation of functioning mitral valve and its relationship to interstitial cell deformations”. 2013 Biomedical Engineering Society Annual Meeting, September 25–28, 2013, Seattle, WA.
26. Lee, CH; Gorman, RC; Gorman, JH; **Amini, R**; Sacks, MS; “A Novel Micro-CT Based Anatomically Accurate Finite Element Model for Simulation-aided Assessment of Mitral Valve Repairs”. ASME/FDA 2013 1st Annual Frontiers in Medical Devices: Application of Computer Modeling and Simulation (FMD 2013), September 11–13, Washington, DC.
27. Lee, CH; Oomen, PJA; Rabbah, JP; Saikrishnan, N; Yoganathan, A; Gorman, RC; Gorman, JH; **Amini, R**; Sacks, MS; “A High-fidelity, Micro-structural & Anatomically Accurate 3D Finite Element Model for Functioning Heart Mitral Valve”. 2013 Summer Bioengineering Conference, June 26-29, Sun River, OR.

[‡] Corresponding author

[§] Data were obtained from ISI Web of Science (accessed online, Jan 2016).

** Presenter underlined if not Amini

28. Barone, WR; **Amini, R**; Maiti, S; Moalli PA; Abramowitch SD; “Surface Curvature of Common Prolapse Meshes Alters Under Variable Loading Conditions”. 2013 American Urogynecological Society Annual Meeting, October 16-19, Las Vegas, NV.
29. **Amini, R**; Sacks, MS; “A Novel Model for Heart Valve Biomaterial Fatigue Response.” 2012 International Workshop on Computational Mechanics of Material, September 22-24, Baltimore, MD.
30. Carruthers, CA; Good, B; D’Amore, A; Liao, J; **Amini, R**; Watkins, SC; Sacks, MS; “Alterations in the Microstructure of the Anterior Mitral Valve Leaflet under Physiological Stress.” 2012 Summer Bioengineering Conference, June 20-23, Fajardo, Puerto Rico.
31. Rainis, CA; **Amini, R**; Debski, RE; “A Method for Predicting Collagen Fiber Alignment in the Glenohumeral Capsule During Clinically Relevant Deformation.” 2012 Summer Bioengineering Conference, June 20-23, Fajardo, Puerto Rico.
32. **Amini, R**; Koomalsingh, K; Carruthers, CA; Shuto, T; Gorman, RC; Gorman, JH; Sacks, MS; “Towards the Development of Meso and Micro-scale High Fidelity Models of the Mitral Valve.” 2011 BMES Annual Meeting, October 12-15, Hartford, CT.
33. Carruthers, CA; Good, B; D’Amore, A; **Amini, R**; Shuto, T; Gorman, RC; Gorman, JH; Sacks, MS; “Physiological Micromechanics of the Anterior Mitral Valve Leaflet.” 2011 6th Joint Meeting of the Society for Heart Valve Disease & Heart Valve Society of America, Barcelona, Spain.
34. Carruthers, CA; Good, B; D’Amore, A; **Amini, R**; Gorman, JH; Sacks, MS; “Physiological Micromechanics of the Anterior Mitral Valve Leaflet.” 2011 Summer Bioengineering Conference, June 22-25, Famington, PA.
35. **Amini, R**; Eckert, CE; Carruthers, CA; Koomalsingh, K; Minakawa, M; Gorman, RC; Gorman, JH; Sacks, MS; “Functional Dynamic *In-vivo* Stresses of the Mitral Valve Anterior Leaflet.” 2011 Summer Bioengineering Conference, June 22-25, Famington, PA.
36. **Amini, R**; Eckert, CE; Carruthers, CA; Koomalsingh, K; Minakawa, M; Gorman, JH; Gorman, RC; Sacks, MS; “*In-vivo* Dynamic Stress History of the Mitral Valve Anterior Leaflet.” 2011 2nd International Conference on Mathematical and Computational Biomedical Engineering, March 30 – April 1, Washington, D.C.
37. **Amini, R**; Barocas, VH; Kavehpour, HP; Hubschman, JP; “Intraocular Pressure Alters Following Altitude Changes in Patients With Gas-Filled Eyes: Theoretical Analysis.” 2010 Summer Bioengineering Conference, June 16-19, Naples, FL.
38. **Amini, R**; Barocas, VH; “Does Spontaneous Blinking Increase Iris-Lens Contact” 2010 Summer Bioengineering Conference, June 16-19, Naples, FL.
39. **Amini, R**; Oltean, A; Barnett, VA; Segal, Y; Barocas, VH; “Mechanical Properties of the Porcine Lens Capsule.” 2008 Summer Bioengineering Conference, June 25-29, Marco Island, FL.
40. **Amini, R**; Warner, GM; Nayeb-Hashemi, H; “Natural Frequency Analysis of Liquid-filled Tanks.” 2005 ASME Design Engineering Technical Conference, September 24-28, Long Beach, CA.

POSTER PRESENTATIONS^{††}

41. Pant, AD; Kagemann, L; Sigal, IA; Schuman, J; **Amini, R**; “An Image-Based Inverse Finite Element Method To Determine the Mechanical Properties of Human Trabecular Meshwork.” 2016 Summer Biomechanics, Bioengineering, and Biotransport Conference, June 28- July 2, National Harbor, MD.
42. Pant, AD; Kagemann, L; Sigal, IA; Schuman, J; **Amini, R**; “In-vivo Mechanical Properties of Human Trabecular Meshwork.” 2016 ARVO Imaging In The Eye Conference, April 30, Seattle, WA.
43. **Amini, R**; Williams, K; “High Risk of Ocular Hypotony in Patients with Intravitreal Gas Bubbles Traveling through Subsea Tunnels.” 2016 ARVO Annual Meeting, May 1-5, Seattle, WA.
44. Thomas, VS; Pant, AD; Amini-Khoiy, K; Asgarian, KT; **Amini, R**; “Microstructural Changes in The Tricuspid Valve Anterior Leaflet in Response To Biaxial Mechanical Loading.” Accepted for poster presentation at 2015 Biomedical Engineering Society Annual Meeting, October 7-10, Tampa, FL.

^{††}Presenter underlined if not Amini

45. Pant, AD; **Amini, R**; “Determination of the Mechanical Properties of the Iris Using Inverse Finite Element Modeling.” 2015 Summer Biomechanics, Bioengineering, and Biotransport Conference, June 17-20, Snowbird, UT.
46. **Amini, R**; Gsellman, LA; “Computational Simulation of Intraocular Pressure Changes after Descent and Subsequent Ascent in Patients with Intravitreal Gas Bubbles.” 2015 ARVO Annual Meeting, May 3-7, Denver, CO.
47. Pant, AD; **Amini, R**; “Determination of the Iris Mechanical Properties Using Inverse Finite Element Simulation.” 2015 ARVO Annual Meeting, May 3-7, Denver, CO.
48. Dorairaj, S; Pant, AD; Calhoun, JS; **Amini, R**; “Quantitative Analysis of Anterior Segment Biometric Parameters in Controlled Light Conditions after Laser Peripheral Iridotomy.” 2015 ARVO Annual Meeting, May 3-7, Denver, CO.
49. Gsellman, LA; **Amini, R**; “Computational Modeling of Intravitreal Gas Bubble Expansion during Altitude Changes”. 2015 Midwest American Society of Biomechanics Regional Meeting, February 17-18, 2015, Akron, OH
50. Wognum, S; Bel, A; **Amini, R**; “Quantification of Anisotropic Surface Deformation during Controlled Ex-vivo Filling of the Porcine Urinary Bladder”. 7th World Congress in Biomechanics, July 6-11, 2014, Boston, MA.
51. **Amini, R**; “In-plane Mechanical Properties of Porcine Tricuspid Valve Anterior Leaflet”. 7th World Congress in Biomechanics, July 6-11, 2014, Boston, MA.
52. Lee, CH; Rabbah, JP; Yoganathan, A; **Amini, R**; Gorman, RC; Gorman, JH; Sacks, MS; “A Computational Paradigm for Modeling the Functional Mitral Valve (MV) and MV Surgical Repair”. 7th World Congress in Biomechanics, July 6-11, 2014, Boston, MA.
53. **Amini, R**; Grimm, JL; Jan, NJ; Brown, DJ; Sigal, IA; “Lamina Cribrosa Pore Size Increases When Human Eyes Are Subjected to Acute Intraocular Pressure Elevation.” 2014 ARVO Annual Meeting, May 4-8, Orlando, FL.
54. Barone, WR; **Amini, R**; Maiti, S; Moalli PA; Abramowitch SD; “The Impact of Boundary Conditions on Surface Curvature Measurements of Polypropylene Mesh in Response to Uniaxial Loading”. 2013 Summer Bioengineering Conference, June 26-29, Sun River, OR.
55. **Amini, R**; van Loosdregt IA; Koomalsingh, K; Gorman, RC; Gorman, JH; Sacks, MS; “Integration of Microstructural Architecture of the Mitral Valve into an Anatomically Accurate Finite Element Mesh.” 2012 Summer Bioengineering Conference, June 20-23, Fajardo, Puerto Rico.
56. Jouzdani, S; **Amini, R**; Barocas, VH; “Contribution of Different Physiological and Anatomical Factors to the Anterior Chamber Angle during Pupil Dilation.” 2012 Summer Bioengineering Conference, June 20-23, Fajardo, Puerto Rico.
57. **Amini, R**; Jouzdani, S; Barocas, VH; “Distinctive Effects of Different Parameters Contributing to the Iris Contour and Anterior Chamber Angle during Pupil Dilation.” 2012 ARVO Annual Meeting, May 6-10, Fort Lauderdale, FL.
58. Sacks, MS; **Amini, R**; Eckert, CH; Carruthers, CA; Koomalsingh, K; Minakawa, M; Gorman, RC; Gorman, JH; “Changes In The Functional Dynamic In-vivo Stresses Of The Mitral Valve Anterior Leaflet Following Ring Annuloplasty” 2012 American Heart Association Scientific Sessions, Nov 12-16, Orlando, FL.
59. Jouzdani, S; **Amini, R**; Barocas, VH; “Anterior Chamber Angle and Iris-Lens Contact Alteration During Pupillary Dilation.” 2011 Summer Bioengineering Conference, June 22-25, Farnington, PA.
60. Jouzdani, S; **Amini, R**; Barocas, VH; “Computational Model of Iris-Aqueous Humor Interaction During Pupillary Dilation.” 2011 ARVO Annual Meeting, May 1-5, Fort Lauderdale, FL.
61. **Amini, R**; Barocas, VH; Kavehpour, HP; Hubschman, JP; “Computational Simulation of Intraocular Pressure Rise Caused by Intravitreal Gas Expansion during Altitude Changes.” 2010 ARVO Annual Meeting, May 2-6, Fort Lauderdale, FL.
62. Jouzdani, S; **Amini, R**; Barocas, VH; “Patient-specific Model of Iris Mechanics.” 2010 Summer Bioengineering Conference, June 16-19, Naples, FL.

63. Powell, TA; Barnett, VA; Dorfman, K; Segal, Y; **Amini, R**; Oltean, A; Barocas, VH; “Elasticity of the Lens Capsule as Measured by Osmotic Swelling.” 2010 Summer Bioengineering Conference, June 16-19, Naples, FL.
64. Whitcomb, JE; **Amini, R**; Al-Qaisi, MK; Akkin, T; Barocas, VH; “Effect of the posterior location on the iris concavity during dilation.” 2010 ARVO Annual Meeting, May 2-6, Fort Lauderdale, FL.
65. Barocas, VH; **Amini, R**; “Computational Simulation of Increased Iris-lens contact and Reverse Pupillary Block Caused by Multiple Spontaneous Blinking.” 2010 ARVO Annual Meeting, May 2-6, Fort Lauderdale, FL.
66. Jouzdani, S; Whitcomb, JE; **Amini, R**; Barocas, VH; “Detailed Assessment of the Mechanics of the Multilayer Iris by Indentation and Finite Element Analysis.” 2010 ARVO Annual Meeting, May 2-6, Fort Lauderdale, FL.
67. **Amini, R**; Whitcomb, JE; Al-Qaisi, MK; Akkin, T; Barocas, VH; “The Effect of the Posterior Location of the Dilator on the Iris Concavity.” 2009 Summer Bioengineering Conference, June 17-21, Lake Tahoe, CA.
68. Whitcomb, JE; **Amini, R**; Simha, N; Barocas, VH; “Mechanical Properties of the Iris Dilator and Stroma Using Nanoindentation.” 2009 Summer Bioengineering Conference, June 17-21, Lake Tahoe, CA.
69. Whitcomb, JE; **Amini, R**; Simha, N; Barocas, VH; “Assessment of the Mechanical Properties of the Iris Dilator and Stroma Using Nanoindentation.” 2009 ARVO Annual Meeting, May 3-7, Fort Lauderdale, FL.
70. **Amini, R**; Oltean, A; Barnett, VA; Segal, Y; Barocas, VH; “Mechanical Properties of the Porcine Lens Capsule.” 2008 ARVO Annual Meeting, April 27-May 1, Fort Lauderdale, FL.
71. **Amini, R**; Barocas, VH; “Computer Simulation of Iris Contour in Corneal Indentation.” 2007 ARVO Annual Meeting, May 9, Fort Lauderdale, FL.

BOOK CHAPTERS

72. Pant, AD; **Amini, R** (2016) "Iris Biomechanics." In *Biomechanics of the Eye* , Kugler Publications / SPB Academic Publishing bv, In Press.
73. Fata, B; Zhang, W; **Amini, R**; Sacks, MS (2015) " Mesoscale Structural Models in the Growing Pulmonary Artery." In *Structure-Based Mechanics of Tissues and Organs*, Springer US, 383-402.
74. Lee, CH; **Amini, R**; Sakamoto, Y; Carruthers, CA; Aggarwal, A; Gorman, RC; Gorman GH; Sacks, MS (2015) "Mitral Valves: A Computational Framework." In *Multiscale Modeling in Biomechanics and Mechanobiology*, Springer London, 223-255.

RESEARCH SUPPORT

Akron Children’s Hospital Research Foundation **\$15,000** **2016**

The objective of this study is to construct a computer model of healthy intestine and subsequently to use this model to evaluate intestinal malrotation. The parameters from the computer model will be collected by studying the physical properties of animal mesentery. The model of malrotation will be used to predict which physical factors predispose a patient to developing midgut volvulus. The ideal factors are those that can be determined or measured in a non-invasive manner, such as via imaging, and in a timely fashion to minimize risk to the patient.

Role: Co-Principle Investigator

Firestone Fellowship **Firestone Foundation** **\$10,000** **2014-2015**

Development of an ex vivo right heart simulator to mimic systolic tricuspid valve function- The goal of this project has been to develop an experimental setup to measure valvular deformation in an “ex vivo passive beating heart”.

Role: Principle Investigator

F32-HL110651

NIH/NHLBI

\$155,346

2011-2014

Alteration in the mitral valve stress following repair surgeries- to better understand the etiology of mitral valve repair failure, this project has focused on investigating how surgically-introduced changes in the mitral valve alters the mechanical environment to which valvular cells and extracellular matrix are subjected.

Role: Principle Investigator

INVITED SEMINARS

- “Biomechanics of Soft Tissue from Macro to Micro Levels
Department of Biomedical, Chemical, and Materials Engineering, San José State University, San José, CA 03/19/13
- “Biomechanics of Soft Tissue from Macro to Micro Levels
Department of Mechanical and Industrial Engineering, University of Massachusetts Amherst, Amherst, MA 03/13/13
- “Biomechanics of Soft Tissue from Macro to Micro Levels
Department of Aerospace and Mechanical Engineering, University of Norte Dame, South Bend, IN 02/26/13
- “Biomechanical Factors that Determine the Iris Configuration”
Department of Ophthalmology, University of Pittsburgh, Pittsburgh, PA 11/14/12
- “Biomechanics of Soft Tissue from Macro to Micro Levels”,
Department of Mechanical and Industrial Engineering, Northeastern University, Boston, MA 02/08/12
- “Ocular Biomechanics: Computational Simulation of Corneoscleral Indentation”,
Department of Mechanical Engineering, Howard University, Washington, DC 02/02/10
- “Ocular Biomechanics: Computational Simulation of Corneoscleral Indentation”
Department of Mechanical Engineering, Johns Hopkins University, Baltimore, MD 02/01/10
- “Computational and Experimental Exploration of Eye Mechanics”
Department of Mechanical Engineering, Sharif University, Tehran, Iran 06/22/08

JOURNAL REVIEWING

- Acta Biomaterialia
- Annals of Biomedical Engineering
- Biomedical Engineering Online
- Biomechanics and Modeling in Mechanobiology
- Cardiovascular Engineering and Technology
- Experimental Eye Research
- Investigative Ophthalmology & Visual Science
- Journal of Biomechanical Engineering
- Journal of Biomechanics
- Journal of Cataract and Refractive Surgery
- Journal of Mechanics in Medicine and Biology
- Journal of the Mechanical Behavior of Biomedical Materials
- Molecular Vision

PROFESIONAL MEMBERSHIP

- American Society for Engineering Education (ASEE) 2015-
- American Heart Association (AHA) 2010-

- Biomedical Engineering Society (BMES) 2010-
- American Society of Mechanical Engineers (ASME) 2008-
- Association for Research in Vision and Ophthalmology (ARVO) 2006-

GRANT PROPOSAL REVIEWING

National Science Foundation Study Section	2014
National Center for Supercomputing	2015-present
American Heart Association	2015-present

STUDENT MENTORSHIP

University of Akron

Department of Biomedical Engineering

08/13-present

Current Students

- **Anup Pant**, PhD Student in Biomedical Engineering
Project Title: *Development of an inverse finite element model for subject-specific mechanical characterization of the iris*
Currently third year PhD student at the Department of Biomedical Engineering, The University of Akron, Akron, OH
- **Keyvan Amini Khoiy**, PhD Student in Biomedical Engineering
Project Title: *Mechanical characterization of porcine tricuspid valve*
Currently third year MS student at the Department of Biomedical Engineering, The University of Akron, Akron, OH
- **Vineet Thomas**, PhD Student in Biomedical Engineering
Project Title: *A multi-scale model of tricuspid valve biomechanics*
Currently second year PhD student at the Department of Biomedical Engineering, The University of Akron, Akron, OH
- **Logan Neidert**, BS Student in Biomedical Engineering
Project Title: *Intraocular pressure changes in the presence of intravitreal gas bubbles: nonlinear versus linear models of the corneoscleral shell expansion*
Currently sophomore at the Department of Biomedical Engineering, The University of Akron, Akron, OH
- **Jennifer Bulgrin**, BS Student in Biomedical Engineering
Project Title: *Changes in the tricuspid valve annular deformation following chordae rupture*
Currently sophomore at the Department of Biomedical Engineering, The University of Akron, Akron, OH
- **Antony Black**, BS Student in Biomedical Engineering
Project Title: *The effect of pulmonary hypertension on the tricuspid valve microstructural architecture*
Currently sophomore at the Department of Biomedical Engineering, The University of Akron, Akron, OH
- **Allie Stanly**, BS Student in Biomedical Engineering
Project Title: *Measurement of iris biometrics pre- and post laser peripheral iridotomy (analyzer I)*
Currently sophomore at the Department of Biomedical Engineering, The University of Akron, Akron, OH
- **Mathew Wojcik**, BS Student in Biomedical Engineering
Project Title: *Measurement of iris biometrics pre- and post laser peripheral iridotomy (analyzer II)*
Currently sophomore at the Department of Biomedical Engineering, The University of Akron, Akron, OH
- **Chidiebere Aninweze**, BS Student in Biomedical Engineering
Project Title: *Measurement of iris biometrics pre- and post laser peripheral iridotomy (analyzer III)*

Currently junior at the Department of Biomedical Engineering, The University of Akron, Akron, OH

- **Stephen Cross**, BS Student in Biomedical Engineering

Project Title: *Temperature control during biaxial mechanical testing of soft tissues*

Currently senior at the Department of Biomedical Engineering, The University of Akron, Akron, OH

Former Students

- **Tyler Schimmoeller**, BS Student in Biomedical Engineering

Project Title: *Design and manufacturing of a biaxial stretcher to be used during small angle light scattering experiments*

Currently fulltime researcher in Cleveland Clinic, Cleveland, OH

- **Taylor Verba**, BS Student in Biomedical Engineering

Project Title: *Fixing tricuspid valve leaflets under pressure*

Currently sophomore at the Department of Biomedical Engineering, The University of Akron, Akron, OH

- **Lucas Gsellman**, BS Student in Biomedical Engineering

Project Title: *Development of a biaxial stretcher to fix porcine tricuspid valves under mechanical loadings*

Currently senior at the Department of Biomedical Engineering, The University of Akron, Akron, OH

- **Thomas Decker**, BS Student in Biomedical Engineering

Project Title: *Development of an ex-vivo beating heart*

Currently senior at the Department of Biomedical Engineering, The University of Akron, Akron, OH

- **Ivanna J. Ross**, BS Student in Biomedical Engineering

Project Title: *Using MATLAB to compute porcine urinary bladder ex-vivo deformation*

Currently junior at the Department of Biomedical Engineering, The University of Akron, Akron, OH

- **Evan Littlejohn**, BS Student in Biomedical Engineering

Project Title: *Biomechanics Is Great (BIG) podcasts: how to encourage K-12 students to learn about biomechanics*

Currently junior at the Department of Biomedical Engineering, The University of Akron, Akron, OH

- **Kole Williams**, BS Student in Mechanical Engineering

Project Title: *Intraocular pressure changes during travels through underwater tunnels following pneumatic retinopathy*

Currently junior at the Department of Mechanical Engineering, The University of Akron, Akron, OH

University of Pittsburgh, Pittsburgh, PA

Department of Bioengineering

05/11-08/13

- **Inge van Loosdregt**, MS International Internship from Eindhoven University of Technology

Project Title: *Development of anatomically accurate finite element meshes from micro-CT scans of the mitral valve anterior leaflet*

Currently PhD Student at the Department of Biomedical Engineering, Eindhoven University of Technology, Eindhoven, The Netherlands

- **Luke Tedesco**, Summer REU from Brown University

Project Title: *Characterization of bovine mitral heart valve remodeling during pregnancy*

University of Minnesota, Minneapolis, MN

Department of Biomedical Engineering

09/07-05/10

- **Tracy A. Powell**, MS Student in Mechanical Engineering

Project Title: *Elasticity of porcine ocular lens as measured by osmotic swelling*

Currently PhD/MD Student, University of Minnesota, Minneapolis, MN

- **Robert J. Burgmeier**, BS Student in Biomedical Engineering

Project Title: *Investigation of intraocular pressure changes in bubble-filled porcine eyes*

Currently MD Student, Northwestern University, Chicago, IL

- **Alina Oltean**, BS Student in Biomedical Engineering
Project Title: *Measurement of ocular lens diameter changes due to osmotic swelling*
Currently PhD Student, Department of Biomedical Engineering, Washington University at St. Louis, St. Louis, MO

GRADUATE STUDENT COMMITTEE

Department of Biomedical Engineering, The University of Akron

MS Level

Megan Jeffords (Advised by Dr. Ge Zhang)

PhD Level

Jessica Stukel (Advised by Dr. Rebecca Willits)
Nicholas Shaffer (Advised by Dr. Francis Loth and Dr. Bryn Martin)
Zahra Najafi (Advised by Dr. Ajay Mahajan)
Suraj Thyagaraj (Advised by Dr. Francis Loth and Dr. Bryn Martin)
Pawan Kc (Advised by Dr. Ge Zhang)
Soroush Pahlavian (Advised by Dr. Francis Loth)

ORGANIZING COMMITTEE

- Exhibition Chair, 2016 Summer Biomechanics, Bioengineering, and Biotransport Conference:
- Chair of MS Paper Competition, 2016 Summer Biomechanics, Bioengineering, and Biotransport Conference:
- Chair of BS Paper Competition, 2015 Summer Biomechanics, Bioengineering, and Biotransport Conference: chair of BS paper competition
- Workshop organizer, 2015 Summer Biomechanics, Bioengineering, and Biotransport Conference: “Funding Mechanisms for Early-Stage Investigators”
- Session organizer
 - 2015 Summer Biomechanics, Bioengineering, and Biotransport Conference: “Ocular Biomechanics I” and “Ocular Biomechanics II” sessions
 - 7th World Congress in Biomechanics: “Biomechanics of the Posterior Eye” and “Biomechanics of the Anterior Eye” four sessions

OTHER SERVICES TO THE PROFESSION

- Abstract reviewer
 - 7th World Congress in Biomechanics
 - 2015 Summer Biomechanics, Bioengineering, and Biotransport Conference.
 - 2016 Summer Biomechanics, Bioengineering, and Biotransport Conference.
- Session chair
 - 2015 Summer Biomechanics, Bioengineering, and Biotransport Conference: “Ocular Biomechanics” session
 - 2015 Midwest American Society of Biomechanics Meeting: “Pelvic Health II” session
 - 2014 Biomedical Engineering Society Annual Meeting: “Multiscale Biomechanics” session
 - 2014 Midwest American Society of Biomechanics Meeting: “Finite Element Modeling” session
 - 7th World Congress in Biomechanics: “Microstructural Modeling” and “Biomechanics of the Anterior Eye” sessions
- Member of the NIH Biomechanics Working Group
- Member of the ASME Biomedical Engineering Division
 - Solid Mechanics committee
 - Fluid Mechanics committee

- Education committee

SERVICES TO THE SOCIETY

- Volunteering as the co-instructor of Robot-C to 4th and 5th graders at Woodridge Intermediate School, Peninsula, OH *2015- present*
- Mentoring and judging for high school science fairs as part of the NEOHSTEM Alliance (participated at four levels of the competition) *2013-present*
- Designed questions for the Akron Science Olympiad *2013-2014*

HOBBIES AND INTERESTS

- Cooking ethnic cuisines for family and friends
- Marathon running
- Cross-country skiing
- 80's music / classical music
- US presidential history
- Physical Computation
- Language
 - Persian: native
 - English: fluent
 - Arabic: proficient
 - Spanish: proficient
- Board games