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EDUCATION

University of Pennsylvania, Philadelphia, PA Aug. 2014

Ph.D., Mechanical Engineering and Applied Mechanics

Dissertation: “Overall Mechanical Response of Soft Composite Materials with Particulate Microstructure at Finite Strains”

Advisor: Dr. Pedro Ponte Castañeda

Sharif University of Technology, Tehran, Iran Dec. 2007

M.Sc., Mechanical Engineering and Applied Mechanics

Dissertation: “Size-Dependent Behavior of Solids Containing Nano-Inhomogeneities”

Advisor: Dr. Reza Naghdabadi and Dr. Hossein Shodja

Iran University of Science and Technology, Tehran, Iran May 2005

B.Sc., Mechanical Engineering

Dissertation: “Wave Propagation in Dissipative Porous Media”

Advisor: Dr. Seyyed Hasheminejad

ACADEMIC APPOINTMENTS

Assistant Professor

Texas A&M University, College Station, TX

Department of Biomedical Engineering Jan. 2020-Present

Department of Mechanical Engineering (Courtesy Appt) Sep. 2020-Present

School of Engineering Medicine, EnMed (Courtesy Appt) Sep. 2023-Present

Adjunct Assistant Professor

Houston Methodist Academic Institute, Houston, TX

Department of Cardiovascular Sciences Oct. 2020-Present

University of Texas at Austin, Austin, TX Oct. 2014-Dec. 2019

Oden Institute for Computational Engineering and Sciences

Department of Biomedical Engineering

- **Research Scientist** Oct. 2018-Dec. 2019
- **Research Associate** Sep. 2016-Sep. 2018
- **Postdoctoral Fellow** Oct. 2014-Aug. 2016

Lecturer

University of Texas at Austin, Austin, TX Jan. 2017-May 2017

Department of Aerospace Engineering & Engineering Mechanics

Lecturer

University of Damavand, Damavand, Iran Jan. 2009-Aug. 2009

RESEARCH INTERESTS

- Biomechanics of Cardiac Remodeling & Regeneration in Structural Heart Diseases
- Integrated 4D Imaging-Modeling to Personalize Cardiac Diagnosis, Prognosis, and Interventions
- Machine Learning in Cardiovascular Biomechanics and Mechanobiology
- Lung Biomechanics and Heart-Lung Interaction in Cardiopulmonary Diseases
- Mechanobiology of Endothelial Cells and Vascular Senescence

HONORS & AWARDS

- Cain Developmental Faculty Fellow, Biomedical Engineering Department, Texas A&M University, 2023
- Honorable Mention Poster Award, SPIE Conference on Medical Imaging, 2023, “Volumetric versus distortional deformation in rat lungs”
- 2nd Place Poster- Society of South Asian Heart Research, AHA-BCVS, Chicago, 2022
- American Heart Association- Basic Cardiovascular Sciences (BCVS) Abstract Travel Grant, 2021
- American Heart Association- Basic Cardiovascular Sciences Early Career Mentorship Award, 2020
- NIH Pathway to Independence K99/R00 Award, 2018
- American Heart Association Career Development Award, 2018
- Travel Award, 14th U.S. National Congress on Computational Mechanics, Montreal, 2017
- NIH Ruth L. Kirschstein NRSA Postdoctoral Fellowship, 2016
- Fondren Foundation Postdoctoral Fellowship, 2014-2015
- NSF Travel Grant, NSF CMMI Conference, Northeastern University, 2012

PEER REVIEWED PUBLICATIONS

60. B. Walther, A. Sears, A. Mojiri, **R. Avazmohammadi**, J. Gu, O. Chumakova, N. Rajeeva, A. Dominic, J. Martiel, S. Yazdani, J. Cooke, J. Ohayon, R. Pettigrew. Disrupted stiffness ratio alters nuclear mechanosensing. *Matter*, 6, 3608-3630, 2023.
59. R. Mehdi, M. Kumar, E. Mendiola, S. Sadayappan, and **R. Avazmohammadi**. Machine learning-based classification of cardiac cell relaxation impairment using calcium and sarcomere length transients. *Computers in Biology and Medicine*, 163, 107134, 2023.
58. R. Mehdi, E. Mendiola, A. Sears, J. Ohayon, G. Choudhary, R. Pettigrew, and **R. Avazmohammadi**. Comparison of three machine learning methods to estimate myocardial stiffness. In *Reduced-order Models for the Biomechanics of Living Organs*, 363-382, Elsevier, 2023.
57. M. Usman, E. Mendiola, T. Mukherjee, R. Mehdi, J. Ohayon, P. Alluri, S. Sadayappan, G. Choudhary, **R. Avazmohammadi**. On the possibility of estimating myocardial fiber architecture from cardiac strains. In *International Conference on Functional Imaging and Modeling of the Heart*, Springer International Publishing, 74-83, 2023.
56. E. Mendiola, E. Wang, A. Leatherman, Q. Xiang, S. Neelakantan, P. Vanderslice, and **R. Avazmohammadi**. A micro-anatomical model of the infarcted left ventricle border zone to study the

- influence of collagen undulation. In *International Conference on Functional Imaging and Modeling of the Heart*, Springer International Publishing, 34-43, 2023.
55. D. Li, E. Mendiola, **R. Avazmohammadi**, F. Sachse, and M. Sacks. A multi-scale computational model for the passive mechanical behavior of right ventricular myocardium. *Journal of the Mechanical Behavior of Biomedical Materials*, 142, 105788, 2023.
 54. S. Neelakantan, M. Kumar, H. Phelan, E. Mendiola, V. Serpooshan, S. Sadayappan, and **R. Avazmohammadi**. Multiscale characterization of left ventricle active behavior in the mouse. *Acta Biomaterialia*, 162, 240–253, 2023.
 53. T. Mukherjee, S. Neelakantan, G. Choudhary, and **R. Avazmohammadi**. Improved right ventricular strain estimation in rats using anisotropic diffusion filtering. In *Medical Imaging 2023: Ultrasonic Imaging and Tomography*, 12470, 419-425, SPIE, 2023.
 52. S. Neelakantan, M.K. Ismail, T. Mukherjee, B.J. Smith, R. Rizi, and **R. Avazmohammadi**. Volumetric versus distortional deformation in rat lungs. In *Medical Imaging 2023: Image-Guided Procedures, Robotic Interventions, and Modeling*, 12466, 419-425, SPIE, 2023.
 51. E. Mendiola, D. da Silva Gonçalves Bos, D. Leichter, A. Vang, P. Zhang, O. Leary, R. Gilbert, **R. Avazmohammadi***, Gaurav Choudhary*. Right ventricular architectural remodeling and functional adaptation in pulmonary hypertension. *Circulation: Heart Failure*, 16(2), e009768, 2023. *Co-corresponding authors.
 50. E. Mendiola, S. Neelakantan, Q. Xiang, S. Merchant, K. Li, E.W. Hsu, R.A.F. Dixon, P. Vanderslice, and **R. Avazmohammadi**. Contractile adaptation of the left ventricle post-myocardial infarction: Predictions by rodent-specific computational modeling. *Annals of Biomedical Engineering*, 51, 846–863, 2023.
 49. W. Liu, K.M. Labus, M. Ahern, K. LeBar, **R. Avazmohammadi**, C.M. Puttlitz, and Z. Wang. Strain-dependent stress relaxation behavior of healthy right ventricular free wall. *Acta Biomaterialia*, 152, 290-299, 2022.
 48. S. Neelakantan, Y. Xin, D.P. Gaver, M. Cereda, R. Rizi, B.J. Smith, and **R. Avazmohammadi**. Computational lung modeling in respiratory medicine. *Journal of the Royal Society Interface*, 19, 20220062, 2022.
 47. W. Liu, M. Nguyen-Truong, K. LeBar, K.M. Labus, E. Gray, M. Ahern, S. Neelakantan, **R. Avazmohammadi**, K.C. McGilvray, C.M. Puttlitz, and Z. Wang. Multiscale contrasts between the right and left ventricle biomechanics in healthy adult sheep and translational implications. *Frontiers in Bioengineering and Biotechnology*, 10, 2022.
 46. E.A. Mendiola, M.S. Sacks, and **R. Avazmohammadi**. Mechanical interaction of the pericardium and cardiac function in the normal and hypertensive rat heart. *Frontiers in Physiology*, 838, 2022.
 45. C.W. Patrick, J. Macheek, **R. Avazmohammadi**, D.L. Alge, C.W. Peak, and M. McShane. Process for faculty-driven, data-informed curriculum continuity review in biomedical engineering. *Biomedical Engineering Education*, 1-16, 2022.
 44. H. Babaei, E.A. Mendiola, S. Neelakantan, Q. Xiang, A. Vang, R.A.F. Dixon, D.J. Shah, P. Vanderslice, G. Choudhary, and **R. Avazmohammadi**. A machine learning model to estimate myocardial stiffness from EDPVR. *Scientific Reports*, 12, 1-17, 2022.

43. D.J. Talluri, H. Nguyen, **R. Avazmohammadi***, and A.K. Miri*. Ink rheology regulates stability of bioprinted strands. *Journal of Biomechanical Engineering*, 144, 074503, 2022. *Co-corresponding authors.
42. A.J. Clevenger, L.Z. Crawford, D. Noltensmeyer, H. Babaei, S.B. Mabbott, **R. Avazmohammadi**, and S. Raghavan. Rapid prototypable biomimetic peristalsis bioreactor capable of concurrent shear and multi-axial strain. *Cells, Tissues, Organs*, 212, 96-110, 2022.
41. H. Liu, J. Soares, J. Walmsley, D. Li, S. Raut, **R. Avazmohammadi**, P. Iaizzo, M. Palmer, J. Gorman, R. Gorman, and M. Sacks. The impact of myocardial compressibility on organ-level simulations of the normal and infarcted heart. *Scientific Reports*, 11, 1-15, 2021.
40. M. Keshavarzian, E. Fugate, S. Chavan, V. Chu, M. Arif, D. Lindquist, S. Sadayappan, and **R. Avazmohammadi**. An image registration framework to estimate 3D myocardial strains from cine cardiac MRI in mice. In *International Conference on Functional Imaging and Modeling of the Heart*, Proceedings, 273-284, Springer International Publishing, 2021.
39. D. Li, E. Mendiola, **R. Avazmohammadi**, F. Sachse, and M. Sacks. A high-fidelity 3D micromechanical model of ventricular myocardium. In *International Conference on Functional Imaging and Modeling of the Heart*, Proceedings, 168-177, Springer International Publishing, 2021.
38. M. Tomov, P. Lilanni, N. Liqun, C. Huang, J. Bowen, M. Andrew, I. Sahar, A. Theus, G. Kabboul, K. Do, S. Bhamidipati, J. Fischbach, K. McCoy, B. Zambrano, J. Zhang, **R. Avazmohammadi**, A. Mantalaris, D. Frakes, L. Dasi, B. Lindsey, H. Bauser-Heaton, and V. Serpooshan. A 3D bioprinted in vitro model of pulmonary artery atresia to evaluate endothelial cell response to microenvironment. *Advanced Healthcare Materials*, e2100968, 2021.
37. A. Cetnar, M. Tomov, L. Ning, B. Jing, A. Theus, A. Kumar, A. Wijntjes, S. Bhamidipati, K. Do, A. Mantalaris, J. Oshinski, **R. Avazmohammadi**, B. Lindsey, H. Bauser-Heaton, and V. Serpooshan. Patient-specific 3D bioprinted models of developing human heart. *Advanced Healthcare Materials*, e2001169, 2020.
36. D. Li, **R. Avazmohammadi**, J. Gorman, R. Gorman, and M. Sacks. How hydrogel inclusions modulate the local mechanical response in early and fully formed post-infarcted myocardium. *Acta Biomaterialia*, 114, 296-306, 2020.
35. **R. Avazmohammadi**, J. Soares, D. Li, T. Eperjesi, J. Pilla, R. Gorman, and M. Sacks. On the in-vivo systolic compressibility of left ventricular free wall myocardium in the normal and infarcted heart. *Journal of Biomechanics*, 109767, 2020.
34. D. Li, **R. Avazmohammadi**, J. Gorman, R. Gorman, and M. Sacks. Insights into the passive mechanical behavior of left ventricular myocardium using a robust constitutive model based on full 3D kinematics. *The Journal of the Mechanical Behavior of Biomedical Materials*, 103, 103508, 2020.
33. **R. Avazmohammadi**, E. Mendiola, D. Li, P. Vanderslice, R. Dixon, and M. Sacks. Interactions between structural remodeling and hypertrophy in right ventricle in response to pulmonary arterial hypertension. *Journal of Biomedical Engineering*, 141, 091016, 2019.
32. **R. Avazmohammadi**, J. Soares, D. Li, S. Raut, R. Gorman, and M. Sacks. Contemporary biomechanical models of myocardium. *Annual Review of Biomedical Engineering*, 21, 417-442, 2019.

31. **R. Avazmohammadi**, E. Mendiola, J. Soares, D. Li, Z. Chen, S. Merchant, E. Hsu, P. Vanderslice, R. Dixon, and M. Sacks. A computational cardiac model for the adaptation to pulmonary arterial hypertension in the rat. *Annals of Biomedical Engineering*, 47, 138-153, 2019.
30. **R. Avazmohammadi**, D. Li, T. Leahy, E. Shih, J. Soares, J. Gorman, R. Gorman, and M. Sacks. An integrated inverse model-experimental approach to determine soft-tissue three-dimensional constitutive parameters: Application to post-infarcted myocardium. *Biomechanics and Modeling in Mechanobiology*, 17, 31-53, 2018.
29. S. Jang, R. Vanderpool, **R. Avazmohammadi**, E. Lapshin, T. Bachman, M. Sacks, and M. Simon. Relating biomechanical and hemodynamic measures of right ventricular diastolic function: Translating tissue biomechanics to clinical relevance. *Journal of the American Heart Association*, 6(9), e006084, 2017.
28. **R. Avazmohammadi**, M. Hill, M. Simon, and M. Sacks. Transmural remodeling of right ventricular myocardium in response to pulmonary arterial hypertension. *APL Bioengineering*, 1(1) 016105, 2017.
27. **R. Avazmohammadi** and R. Hashemi. Effect of a herringbone mesostructure on the electromechanical properties of piezofiber composites for energy harvesting applications. *Physical Review Applied*, 7, 024017, 2017.
26. **R. Avazmohammadi**, M. Hill, M. Simon, W. Zhang and M. Sacks. A novel constitutive model for passive right ventricular myocardium: Evidence for direct myo-collagen fiber mechanical coupling. *Biomechanics and Modeling in Mechanobiology*, 16, 561-581, 2017.
25. **R. Avazmohammadi** and P. Ponte Castañeda. Macroscopic rheological behavior of suspensions of soft solid particles in yield stress fluids. *Journal of Non-Newtonian Fluid Mechanics*, 234, 139-161, 2016.
24. M. Agoras, **R. Avazmohammadi** and P. Ponte Castañeda. Incremental variational procedure for elasto-viscoplastic composite and application to polymer- and metal-matrix composites reinforced by spheroidal elastic particles. *International Journal of Solids and Structures*, 97-98, 668-686, 2016.
23. **R. Avazmohammadi** and P. Ponte Castañeda. Macroscopic constitutive relations for elastomers reinforced with short aligned fibers: instabilities and post-bifurcation response. *Journal of the Mechanics and Physics of Solids*, 97, 37-67, 2016.
22. **R. Avazmohammadi** and P. Ponte Castañeda. The rheology of non-dilute dispersions of highly deformable viscoelastic particles in Newtonian fluids. *Journal of Fluid Mechanics*, 763, 386-432, 2015.
21. A.K. Miri, N.Y.K. Li, **R. Avazmohammadi**, S.L. Thibeault, R. Mongrain, L. Mongeau. Study of extracellular matrix in vocal fold biomechanics using a two-phase model. *Biomechanics and Modeling in Mechanobiology*, 14, 49-57, 2015.
20. M.H. Siboni, **R. Avazmohammadi**, P. Ponte Castañeda. Electro-mechanical instabilities in fiber-constrained, dielectric-elastomer composites subjected to all-around dead loading. *Mathematics and Mechanics of Solids*, 1-31, 2014.
19. **R. Avazmohammadi** and P. Ponte Castañeda. On the macroscopic response, microstructure evolution, and macroscopic stability of short-fiber-reinforced elastomers at finite strains: I—Analytical results. *Philosophical Magazine*, 94, 1031-1067, 2014.

18. **R. Avazmohammadi** and P. Ponte Castañeda. On the macroscopic response, microstructure evolution, and macroscopic stability of short-fiber-reinforced elastomers at finite strains: II—Representative examples. *Philosophical Magazine*, 94, 1068-1094, 2014.
17. R. Hashemi and **R. Avazmohammadi**. Surface effects on the stability of nanorings under uniform pressure. *Journal of Applied Physics*, 114, 144307, 2013.
16. **R. Avazmohammadi**, R. Naghdabadi. Effective behavior of porous elastomers containing aligned spheroidal voids. *Acta Mechanica*, 112, 1901-1915, 2013.
15. **R. Avazmohammadi** and P. Ponte Castañeda. Tangent second-order estimates for the large-strain, macroscopic response of particle-reinforced elastomers. *Journal of Elasticity*, 112, 139-183, 2013.
14. J.E. Jam, Y. Mirzaei, B. Gheshlaghi and **R. Avazmohammadi**. Size-dependent free vibration analysis of infinite nanotubes using elasticity theory. *Journal of Mechanics of Materials and Structures*, 7, 137-144, 2012.
13. A.K. Miri, **R. Avazmohammadi** and F. Yang. Effect of surface stress on the deformation of an elastic half-plane containing a nano-cylindrical hole under a surface loading. *Journal of Computational and Theoretical Nanoscience*, 8, 231-236, 2011.
12. **R. Avazmohammadi**, R. Hashemi, H.M. Shodja, and M.H. Kargarnovin. Ellipsoidal domain with piecewise non uniform eigenstrain field in one of joined isotropic half-spaces. *Journal of Elasticity*, 98, 117-40, 2010.
11. T. Goudarzi, **R. Avazmohammadi**, R. Naghdabadi. Surface energy effects on the yield strength of nanoporous materials containing nanoscale cylindrical voids. *Mechanics of Materials*, 42, 852-62, 2010.
10. S. Abbasion, A. Rafsanjani, **R. Avazmohammadi**, and A. Farshidianfar. Free vibration of microscaled Timoshenko beams. *Applied Physics Letters*, 95, 143122, 2009.
9. **R. Avazmohammadi**, R. Naghdabadi and G.W. Weng. Finite anti-plane shear deformation of nonlinear composites reinforced by elliptic fibers. *Mechanics of Materials*, 41, 868-877, 2009.
8. **R. Avazmohammadi**, F. Yang and S. Abbasion. A nanosized inclusion in an elastic half-plane with interface stress. *International Journal of Solids and Structures*, 46, 2897-2906, 2009.
7. R. Hashemi, **R. Avazmohammadi**, H.M. Shodja and G.W. Weng. Composites with superspherical inhomogeneities. *Philosophical Magazine Letters*, 89, 439-51, 2009.
6. M. Hasheminejad and **R. Avazmohammadi**. Size-dependent effective dynamic properties of unidirectional nanocomposites with interface energy effects. *Composites Science and Technology*, 65, 2538-46, 2009.
5. **R. Avazmohammadi** and R. Naghdabadi. Strain energy-based homogenization of nonlinear elastic particulate composites. *International Journal of Engineering Science*, 47, 1038-48, 2009.
4. S.M. Hasheminejad and **R. Avazmohammadi**. Dynamic stress concentrations in lined twin tunnels within fluid-saturated soil. *Journal of Engineering Mechanics (ASCE)*, 134, 542-554, 2008.

3. S.M. Hasheminejad and **R. Avazmohammadi**. Elastic wave scattering in porous unidirectional fiber-reinforced composites. *Journal of Reinforced Plastics and Composites*, 26, 495-517, 2007.
2. S.M. Hasheminejad and **R. Avazmohammadi**. Harmonic wave diffraction by two circular cavities in a poroelastic formation. *Soil Dynamics and Earthquake Engineering*, 27, 29-41, 2007.
1. S.M. Hasheminejad and **R. Avazmohammadi**. Acoustic diffraction by a pair of poroelastic cylinders. *Journal of Applied Mathematics and Mechanics (ZAMM)*, 86, 589-605, 2006.

PRESENTATIONS

Invited Talks/Guest Lectures

20. Applications of machine learning in improving the assessment of myocardial remodeling in cardiac diseases. Machine Learning + X seminars, Division of Applied Mathematics, Brown University, Virtual Seminar, April, 2023.
19. Image-based multiscale modeling of the lung to quantify regional mechanical stress in vivo. The 2023 International Workshop on Pulmonary Imaging, Penn Radiology, University of Pennsylvania, Philadelphia, Pennsylvania, February, 2023.
18. Role of myocardial passive remodeling in right heart dysfunction in pulmonary hypertension: A biomechanical study. CardioPulmonary Vascular Biology COBRE, Alpert Medical School, Brown University, Providence, Rhode Island, January, 2023.
17. 4D imaging to assist with assessing pathological cardiac remodeling in vivo. Youth in Biomedical Engineering Program, Virtual Event, July, 2022.
16. Integrated 4D imaging-modeling to quantify myocardial remodeling in vivo in cardiac diseases. Department of Biomedical Engineering, New Jersey Institute of Technology, Newark, New Jersey, October, 2021.
15. Integrated cardiac imaging-machine learning to advance cardiac diagnosis and therapy. SIBOR Workshop, Department of Physics and Astronomy, Texas A&M University, College Station, Texas, October, 2021.
14. Machine learning-assisted modeling of cardiac function in health and disease. Computing in Engineering Forum, Grainger Institute for Engineering, University of Wisconsin-Madison, Wisconsin, September, 2021.
13. Computational Modeling of Biomaterials. Guest Lecture for BMED 7101– Advanced Seminar: Biomaterials & Regenerative. Department of Biomedical Engineering, Georgia Tech, Atlanta, Georgia, September, 2020.
12. Subject-specific computational cardiovascular modeling in pulmonary hypertension. Heart, Lung, and Vascular Institute, University of Cincinnati, Cincinnati, Ohio, March, 2020.
11. Integrated computational-experimental cardiac modeling: Application to pulmonary arterial hypertension. Department of Biomedical Engineering, Texas A&M University, College Station, Texas, May, 2019.

10. Computational cardiac modeling: Application to pulmonary arterial hypertension. Department of Mechanical Engineering, University of Utah, Salt Lake City, Utah, March, 2019.
9. Integrated computational-experimental cardiac modeling: Application to pulmonary arterial hypertension and pediatric heart diseases. Children's Heart Research and Outcomes Center (HeRO), Emory University, Atlanta, Georgia, February, 2019.
8. Computational cardiac modeling: Application to pulmonary arterial hypertension. School of Engineering and Applied Science, Washington University in St. Louis, St. Louis, Missouri, February, 2019.
7. Structural remodeling and volumetric growth in the right ventricle under pulmonary arterial hypertension. Department of Mechanical Engineering, Sharif University of Technology, Tehran, Iran, December, 2018.
6. Organ-level computational modeling of heart: Application to pulmonary arterial hypertension. Department of Mechanical Engineering, Colorado School of Mines, Colorado, February, 2018.
5. Organ-level computational modeling of heart: Application to pulmonary arterial hypertension. Department of Mechanical Engineering, Tehran University, Tehran, Iran, December, 2017.
4. Constitutive modeling of soft engineering and biological materials: The role of microstructure. University of Southern California, Department of Aerospace and Mechanical Engineering, Los Angeles, California, February, 2016.
3. Constitutive modeling of soft engineering and biological materials: The role of microstructure. University of Texas at Dallas, Department of Mechanical Engineering, Richardson, Texas, February, 2016.
2. Overall response of soft composite materials with particulate microstructure at finite strains. University of Texas at Austin, Institute for Computational Engineering and Sciences, Austin, Texas, April, 2014.
1. Homogenization of elastomeric composites at finite strains. University of Pennsylvania, Department of Material Science and Engineering, Philadelphia, Pennsylvania, March, 2014.

Conference Oral Presentations

55. E. Mendiola, S. Neelakantan, **R. Avazmohammadi**. An image-driven approach to micromechanical characterization of infarcted myocardium. Biomedical Engineering Society Annual Meeting, Seattle, Washington, October 2023.
54. T. Mukherjee, S. Elliott, N. Manikandan, J. Wansapura, P. Alluri, and **R. Avazmohammadi**. Detection of biomechanical alterations in the left ventricle due to radiation-induced cardiotoxicity. Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
53. S. Neelakantan, D. W. Kaczka, R. R. Rizi, B. J. Smith, **R. Avazmohammadi**. Machine learning assisted multiscale lung modeling to predict alveolar septal wall stress. Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
52. T. Mukherjee, S. Elliott, N. Manikandan, J. Wansapura, P. Alluri, and **R. Avazmohammadi**. Detection of biomechanical alterations in the left ventricle due to radiation-induced cardiotoxicity. Cardiovascular Research Institute Symposium, Texas A&M School of Medicine, Bryan, Texas, August, 2023.

51. R. Mehdi, E. Mendiola, and **R. Avazmohammadi**. Machine learning model to identify size, location, and stiffness of cardiac scar in myocardial infarction using cardiac strains. 17th U.S. National Congress on Computational Mechanics, Albuquerque, New Mexico, July, 2023.
50. S. Neelakantan, P. Zhang, G. Choudhary, and **R. Avazmohammadi**. Integrated right ventricular-pulmonary artery biomechanics in pulmonary hypertension. Summer Biomechanics, Bioengineering, and Biotransport Conference, Vail, Colorado, June, 2023.
49. T. Mukherjee, S. Sadayappan, and **R. Avazmohammadi**. Classification-based super-resolution reconstruction in CMR to quantify four-dimensional myocardial strains in mice. Summer Biomechanics, Bioengineering, and Biotransport Conference, Vail, Colorado, June, 2023.
48. S. Neelakantan, B. Smith, and **R. Avazmohammadi**. A computational-biophysical model of the lung to investigate the effect of surfactant on lung function. Biomedical Engineering Society Annual Meeting, San Antonio, Texas, October, 2022.
47. R.R. Mehdi, M. Kumar, S. Sadayappan, and **R. Avazmohammadi**. A machine learning method to estimate relaxation velocity from calcium kinetics in cardiomyocytes. Biomedical Engineering Society Annual Meeting, San Antonio, Texas, October, 2022.
46. V. Naeni, E. Mendiola, A. Rafsanjani, and **R. Avazmohammadi**. Design of reconfigurable auxetic cardiac patch. Society of Engineering Science Annual Meeting, College Station, Texas, October, 2022.
45. R. Mehdi, E. Mendiola, and **R. Avazmohammadi**. A machine learning model to identify the size and location of cardiac scar in myocardial infarction using cardiac strains. Society of Engineering Science Annual Meeting, College Station, Texas, October, 2022.
44. R. Mehdi, E. Mendiola, and **R. Avazmohammadi**. A deep learning method to estimate myocardial stiffness and collagen undulation. Society of Engineering Science Annual Meeting, College Station, Texas, October, 2022.
43. T. Mukherjee, D. Shah, and **R. Avazmohammadi**. Simulations of left ventricular flow by integrating moving boundary technique and magnetic resonance image registration. Society of Engineering Science Annual Meeting, College Station, Texas, October, 2022.
42. S. Neelakantan, A. Vang, P. Nicely, G. Choudhary, and **R. Avazmohammadi**. Association between pulmonary hemodynamics and RV remodeling in pulmonary hypertension. Society of Engineering Science Annual Meeting, College Station, Texas, October, 2022.
41. W. Liu, K. Labus, M. Ahern, **R. Avazmohammadi**, C. Puttlitz, and Z. Wang. Computational modeling of the passive anisotropic viscoelastic behavior of ovine right ventricles. Summer Biomechanics, Bioengineering, and Biotransport Conference, Eastern Shore, Maryland, June, 2022.
40. S. Neelakantan and **R. Avazmohammadi**. Lung biomechanics in ARDS: The effect of inflammation on tissue stress-strain response. Biomedical Engineering Society Annual Meeting, Orlando, Florida, October, 2021.
39. E. Mendiola, D. Bos, A. Vang, G. Choudhary, and **R. Avazmohammadi**. Echo-derived TAPSE/RVSP as a measure of ventricular-arterial coupling in pulmonary hypertension. Biomedical Engineering Society Annual Meeting, Orlando, Florida, October, 2021.

38. E. Mendiola, H. Babaei, S. Merchant, Q. Xiang, E. Hsu, P. Vanderslice, and **Reza Avazmohammadi**. Estimation of regional structure-function relationship in the infarcted left ventricle. 16th U.S. National Congress on Computational Mechanics, Virtual Event, July, 2021.
37. M. Nowruzpour, D. Bos, D. Leichter, A. Vang, R. Gilbert, G. Choudhary, and **R. Avazmohammadi**. Mechanisms of right ventricular maladaptation to pulmonary arterial hypertension: Excessive wall stiffening and fiber remodeling. Biomedical Engineering Society Annual Meeting, Virtual Event, October, 2020.
36. **R. Avazmohammadi**, S. Chavan, E. Mendiola, S. Xia, Q. Xiang, P. Vanderslice, R. Dixon, and M. Sacks. An integrated modeling approach to characterize left ventricular remodeling in myocardial infarction. Biomedical Engineering Society Annual Meeting, Virtual Event, October, 2020.
35. D. Li, **R. Avazmohammadi**, J. Burdick, R. Gorman, and M. Sacks. How hydrogel inclusions modulate local strain reductions in post-infarcted myocardium. Biomedical Engineering Society Annual Meeting, Virtual Event, October, 2020.
34. E. Mendiola, **R. Avazmohammadi**, F. Sachse, and M. Sacks. A microanatomical biomechanical model of myocardium in the hypertensive heart. Summer Biomechanics, Bioengineering, and Biotransport Conference, Virtual Event, June, 2020.
33. **R. Avazmohammadi**, P. Vanderslice, R. Dixon, and M. Sacks. An integrated inverse modeling approach to characterize subject-specific remodeling of left ventricular free wall under myocardial infarction. Summer Biomechanics, Bioengineering, and Biotransport Conference, Virtual Event, June, 2020.
32. **R. Avazmohammadi**, E. Mendiola, R. Dixon, and M. Sacks. A multiscale model of cardiac remodeling under pulmonary arterial hypertension: From organ to titin. Biomedical Engineering Society Annual Meeting, Philadelphia, Pennsylvania, October, 2019.
31. **R. Avazmohammadi**, E. Mendiola, R. Dixon, and M. Sacks. A multiscale model of cardiac remodeling under hypertension: From organ to titin. 15th U.S. National Congress on Computational Mechanics, Austin, Texas, July, 2019.
30. **R. Avazmohammadi**, E. Mendiola, R. Dixon, and M. Sacks. Structural remodeling and volumetric growth in the right ventricle under pulmonary arterial hypertension. Summer Biomechanics, Bioengineering, and Biotransport Conference, Seven Springs, Pennsylvania, June, 2019.
29. D. Li, **R. Avazmohammadi**, S. Merchant, T. Tomonori, E. Hsu, J. Gorman, R. Gorman, and M. Sacks. A robust 3D constitutive model for the passive properties of left myocardium. Summer Biomechanics, Bioengineering, and Biotransport Conference, Seven Springs, Pennsylvania, June, 2019.
28. **R. Avazmohammadi**, E. Mendiola, D. Li, R. Dixon, and M. Sacks. A murine computational cardiac model of the adaptation to pulmonary arterial hypertension. Biomedical Engineering Society Annual Meeting, Atlanta, Georgia, October, 2018.
27. **R. Avazmohammadi**, E. Mendiola, D. Li, R. Dixon, and M. Sacks. A computational model of heart adaptation to pulmonary arterial hypertension. 13th World Congress in Computational Mechanics, New York City, NY, July, 2018.
26. **R. Avazmohammadi** and M. Sacks. A fiber-specific model of myocardial growth and remodeling under hypertension, 8th World Congress of Biomechanics, Dublin, Ireland, July, 2018.

25. **R. Avazmohammadi**, E. Mendiola, and M. Sacks. Structurally based Growth and Remodeling of Hypertensive Myocardium, 18th U.S. National Congress on Theoretical and Applied Mechanics, Rosemont, Illinois, June, 2018.
24. **R. Avazmohammadi**, E. Mendiola, D. Li, R. Dixon, E. Hsu, and M. Sacks. An in-silico heart model of pulmonary arterial hypertension. Biomedical Engineering Society Annual Meeting, Phoenix, Arizona, October, 2017.
23. D. Li, **R. Avazmohammadi**, J. Soares, R. Gorman, and M. Sacks. An integrated simulation-experimental approach to study the effect of hydrogel injections on the structural-mechanical properties of myocardium. Biomedical Engineering Society Annual Meeting, Phoenix, Arizona, October, 2017.
22. **R. Avazmohammadi**, E. Mendiola, J. Soares, D. Li, R. Dixon, and M. Sacks. Pulmonary arterial hypertension: From myocardium biomechanics to in silico heart model. Society of Engineering Science 54nd Annual Technical Meeting, Boston, Massachusetts, July, 2017.
21. **R. Avazmohammadi**, E. Mendiola, J. Soares, D. Li, R. Dixon, and M. Sacks. An image-based computational heart model of a hypertensive heart. 14th U.S. National Congress on Computational Mechanics, Montreal, Canada, July, 2017.
20. **R. Avazmohammadi**, D. Li, and M. Sacks. On the 3D properties of passive myocardium: An inverse model-experimental approach. Computational & Mathematical Biomedical Engineering, Pittsburgh, Pennsylvania, April, 2017.
19. **R. Avazmohammadi** and M. Sacks. Adaptive remodeling of right ventricular myocardium in response to pulmonary arterial hypertension. Biomedical Engineering Society Annual Meeting, Minneapolis, Minnesota, October, 2016.
18. David Li, **R. Avazmohammadi**, and M. Sacks. A novel numerical-experimental inverse modeling approach to investigate time-evolving three-dimensional mechanical properties of infarcted myocardium. Summer Biomechanics, Bioengineering, and Biotransport Conference, National Harbor, Maryland, June/July, 2016.
17. **R. Avazmohammadi** and M. Sacks. Constitutive modeling of right ventricular myocardium: The role of microstructure. Multiscale Modeling and Validation in Medicine and Biology III, Los Angeles, California, February, 2016.
16. **R. Avazmohammadi**, M. Hill, M. Simon, W. Zhang, and M. Sacks. A novel fiber-level structural constitutive model for viable right ventricular myocardium. Society of Engineering Science 52nd Annual Technical Meeting, College Station, Texas, October, 2015.
15. **R. Avazmohammadi**, S. Raut, J. Lesicko, and M. Sacks. Estimation of fully three-dimensional properties of infarct myocardium using a coupled inverse model-experimental approach. Biomedical Engineering Society Annual Meeting, Tampa, Florida, October, 2015.
14. **R. Avazmohammadi**, S. Raut, J. Lesicko, and M. Sacks. Estimation of fully three-dimensional properties of passive myocardium: A coupled inverse model-experimental study. 13th U.S. National Congress on Computational Mechanics, San Diego, California, July, 2015.
13. Michalis Agoras, **R. Avazmohammadi**, and P. Ponte Castañeda. On the macroscopic elasto-plastic response of metal-matrix composites. EuroMech-Colloquium 577, Micromechanics of Metal Ceramic Composites, Stuttgart, Germany, March, 2015.

12. **R. Avazmohammadi** and P. Ponte Castañeda. The macroscopic response and microstructure evolution in short-fiber-reinforced elastomers at finite strains. 17th U.S. National Congress on Theoretical and Applied Mechanics, East Lansing, Michigan, June, 2014.
11. **R. Avazmohammadi** and P. Ponte Castañeda. Shear band instabilities in nematic elastomers and post-bifurcation macroscopic response. ASME International Mechanical Engineering Congress and Exposition, San Diego, California, November, 2013.
10. P. Ponte Castañeda and **R. Avazmohammadi**. Estimates for the macroscopic response of elastomers reinforced with random distributions of fibers at Finite Strains. IUTAM Symposium on Multiscale Modeling and Uncertainty Quantification of Materials and Structures, Santorini, Greece, September, 2013.
9. **R. Avazmohammadi** and P. Ponte Castañeda. On the macroscopic response, microstructure evolution, and macroscopic stability of short-fiber-reinforced elastomers at finite strains. Prager Medal Symposium in honor of George Weng, The 50th Annual Technical Conference of the Society of Engineering Science, Providence, Rhode Island, July, 2013.
8. P. Ponte Castañeda and **R. Avazmohammadi**. Macroscopic instabilities and soft behavior in fiber-reinforced elastomers at finite strain. ASME International Mechanical Engineering Congress and Exposition, Denver, Colorado, November, 2011.
7. P. Ponte Castañeda and **R. Avazmohammadi**. Macroscopic behavior, microstructure evolution and instabilities in nematic elastomers. The 48th Annual Technical Conference of the Society of Engineering Science, Evanston, Illinois, October, 2011.
6. P. Ponte Castañeda and **R. Avazmohammadi**. Macroscopic instabilities in fiber-reinforced elastomers. Fifth International Symposium on Defect and Material Mechanics, Sevilla, Spain, June/July, 2011.
5. P. Ponte Castañeda and **R. Avazmohammadi**. Nematic elastomers: Macroscopic behavior and instabilities. Symposium on Stability and Nonlinear Solid Mechanics in honor of Nguyen Quoc Son, Paris, September, 2010.
4. **R. Avazmohammadi** and P. Ponte Castañeda. Macroscopic instabilities in nematic elastomers. Mini-symposium on Instabilities and Microstructures in Non-linear Elasticity, SIAM Conference on Mathematical Aspects of Materials Science, Philadelphia, Pennsylvania, May, 2010.
3. **R. Avazmohammadi**, J. Arghavani and R. Naghdabadi. Micromechanics modeling of shape memory alloy fiber composites with slightly weakened interfaces. SPIE Conference of Smart Materials and Nano/Micro-Smart Systems, Australia, December 9-12, 2008.
2. **R. Avazmohammadi** and R. Naghdabadi. Macroscopic stress analysis for nonlinear elastic composites reinforced by spheroidal particles. Seventh Conference of Iranian Aerospace Society, Tehran, Iran, 2008.
1. **R. Avazmohammadi** and S. M. Hasheminejad. Dynamic response of buried viscoelastic pipelines in elastic media to a seismic plane wave. Sixth Conference on Tunnel Engineering, IUST, Tehran, 2004.

Conference Poster Presentations

56. S. Neelakantan, E. Manning, P. Zhang, G. Choudhary, and **R. Avazmohammadi**. Right ventricular myocardial stiffening is associated with pulmonary arterial stiffening in pulmonary hypertension. American Heart Association Scientific Sessions, Philadelphia, Pennsylvania, November, 2023.
55. R. Mehdi, D. Shah, and **R. Avazmohammadi**. The estimation of size and location of myocardial infarction using deep learning approach. Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
54. V. Naeini, E. Mendiola, and **R. Avazmohammadi**. Optimizing implantable sleeve design for improved left ventricular function post-myocardial infarction: a computational approach. Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
53. T. Mukherjee, M. Usman, E. Fugate, D. Lindquist, S. Sadayappan, R. Pettigrew, and **R. Avazmohammadi**. In-silico benchmark to validate four-dimensional cardiac motion quantification in small animals. Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
52. T. Mukherjee, V. Kandala, I. Borazjani, and **R. Avazmohammadi**. On the non-invasive estimation of end-diastolic pressure-volume relationship in the right ventricle. Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
51. S. Neelakantan, P. Zhang, G. Choudhary, **R. Avazmohammadi**. Integrated right ventricular-pulmonary artery biomechanics in pulmonary hypertension. Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
50. R. Mehdi, N. Manikandan, and **R. Avazmohammadi**. Estimation of volume of the right ventricle from the endocardium area of CMR slices using recurrent neural network. Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
49. A. Tabatabaeishoorijeh, T. Mukherjee, M. Rahimi, and **R. Avazmohammadi**. Utilization of computational fluid dynamics in understanding the pressure-resistance relationship in the development of aneurysmal degeneration. Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
48. S. Peighambari, T. Mukherjee, D. Shah, and **R. Avazmohammadi**. Computational modeling of left ventricular flow using CMR-derived four-dimensional wall motion. Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
47. M. Usman, T. Mukherjee, and **R. Avazmohammadi**. Investigating the feasibility of predicting myocardial fiber architecture using cardiac strains. Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
46. E. Mendiola, D. da Silva Gonçalves Bos, A. Vang, G. Choudhary, **R. Avazmohammadi**. Right ventricular architecture determines functional adaptation in pulmonary hypertension. Biomedical Engineering Society Annual Meeting, Seattle, Washington, October 2023.
45. R. Mehdi, S. Neelakantan, E. Wang, P. Zhang, G. Choudhary, and **R. Avazmohammadi**. Contractile adaptation of the right ventricular myocardium in pulmonary hypertension. BCVS Scientific Sessions, Boston, Massachusetts, July-August, 2023.
44. T. Mukherjee, S. Neelakantan, E. Fugate, E. Mendiola, A. Burton, D. Lindquist, S. Sadayappan, and **R. Avazmohammadi**. Association of myocardial stiffening with impaired relaxation in a diabetic murine model of left ventricular diastolic dysfunction. BCVS Scientific Sessions, Boston, Massachusetts, July-August, 2023.

43. L. Jin, M. Tomov, H. Chen, **R. Avazmohammadi**, L. Dasi, H. Bauser-Heaton, and V. Serpooshan. A perfused in vitro model of embryonic heart tube: leveraging 3d bioprinting and human induced pluripotent stem cell technologies to study heart development. BCVS Scientific Sessions, Boston, Massachusetts, July-August, 2023.
42. M. Saadeh, M. Tomov, L. Dasi, **R. Avazmohammadi**, V. Serpooshan, and H. Bauser-Heaton. Endothelial to mesenchymal transition frequency increases in Williams syndrome pulmonary artery endothelial cells in novel 3d bioprinted in vitro arterial model. BCVS Scientific Sessions, Boston, Massachusetts, July-August, 2023.
41. M. Usman, E. Mendiola, T. Mukherjee, R. Mehdi, J. Ohayon, P. Alluri, S. Sadayappan, G. Choudhary, and **R. Avazmohammadi**. On the possibility of estimating myocardial fiber architecture from cardiac strains. International Conference on Functional Imaging and Modeling of the Heart, Lyon, France, June, 2023.
40. E. Mendiola, E. Wang, A. Leatherman, Q. Xiang, S. Neelakantan, R. Dixon, P. Vanderslice, and **R. Avazmohammadi**. A micro-anatomical model of the infarcted left ventricle border zone to study the influence of collagen undulation. International Conference on Functional Imaging and Modeling of the Heart, Lyon, France, June, 2023.
39. R. Mehdi, E. Mendiola, and **R. Avazmohammadi**. A machine learning approach to estimate size and location of myocardial infarction. Summer Biomechanics, Bioengineering, and Biotransport Conference, Vail, Colorado, June, 2023.
38. M. Tomov, H. Chen, S. Neelakantan, **R. Avazmohammadi**, L. Prasad Dasi, H. Bauser-Heaton, V. Serpooshan. Studying endothelial to mesenchymal transition (EndMT) in a 3D bioprinted model of pulmonary vein stenosis. 12th Annual Southeastern Pediatric Research Conference, Atlanta, Georgia, June, 2023.
37. T. Imran, T. Garrett, L. Parra, D. Arcuri, C. Nguyen, M. Jankowich, **R. Avazmohammadi**, M. Atalay, W.C. Wu, G. Choudhary. Endothelin-1 and procollagen type-1 carboxy-terminal propeptide are associated with functional tolerance and cardiac structure and function in heart failure with preserved ejection fraction. AHA Vascular Discovery: From Genes to Medicine Scientific Sessions, Boston, Massachusetts, May, 2023.
36. T. Mukherjee, S. Neelakantan, G. Choudhary, and **R. Avazmohammadi**. Improved right ventricular strain estimation in rats using anisotropic diffusion filtering. SPIE Medical Imaging 2023: In Ultrasonic Imaging and Tomography, San Diego, California, February, 2023.
35. S. Neelakantan, M.K. Ismail, T. Mukherjee, B.J. Smith, R. Rizi, and **R. Avazmohammadi**. Volumetric versus distortional deformation in rat lungs. SPIE Medical Imaging 2023: In Image-Guided Procedures, Robotic Interventions, and Modeling, San Diego, California, February, 2023.
34. T. Mukherjee, M. Keshavarzian, E. Fugate, D. Lindquist, S. Sadayappan, and **R. Avazmohammdi**. Improving myocardial image registration using classification-based super-resolution reconstruction. Biomedical Engineering Society Annual Meeting, San Antonio, Texas, October, 2022.
33. T. Mukherjee, S. Neelakantan, E. Mendiola, A. Burton, S. Sadayappan, and **R. Avazmohammdi**. Effects of passive remodeling on relaxation in left ventricular diastolic dysfunction. Biomedical Engineering Society Annual Meeting, San Antonio, Texas, October, 2022.

32. S. Neelakantan, P. Nicely, G. Choudhary, and **R. Avazmohammadi**. Association of RV hemodynamics with RVFW stiffening in pulmonary hypertension. Biomedical Engineering Society Annual Meeting, San Antonio, Texas, October, 2022.
31. E.A. Mendiola, S. Neelakantan, Q. Xiang, S. Merchant, K. Li, E. Hsu, R.A.F. Dixon, P. Vanderslice, and **R. Avazmohammadi**. Contractile adaptation of the left ventricle following myocardial infarction: Predictions by computational modeling. Biomedical Engineering Society Annual Meeting, San Antonio, Texas, October, 2022.
30. R.R. Mehdi, E. Mendiola, A. Sears, R. Pettigrew, **R. Avazmohammadi**. Estimation of myocardial mechanical properties by deep learning approach. Biomedical Engineering Society Annual Meeting, San Antonio, Texas, October, 2022.
29. T. Mukherjee, S. Neelakantan, E. Mendiola, A. Burton, S. Sadayappan, and **R. Avazmohammadi**. Image-based inverse modeling to study the effect of myocardial stiffness on its relaxation. Society of Engineering Science Annual Meeting, College Station, Texas, October, 2022.
28. S. Neelakantan, M. Kumar, R.R. Singh, S.E. Koch, J. Rubinstein, A.J. Burton, S. Sadayappan, and **R. Avazmohammadi**. Multiscale characterization of left ventricular diastolic dysfunction in diabetic and cardiac myosin binding protein-C phospho-ablated murine models. BCVS Scientific Sessions, Chicago, Illinois, July, 2022.
27. L. Ning, M. Tomov, S. Zanella, B. Zambrano, **R. Avazmohammadi**, M. Mahmoudi, H. Bauser-Heaton, Vahid Serpooshan. Magnetic nanoparticle-mediated targeting of endothelium to address restenosis in a bioprinted in vitro model of pulmonary arteries. AHA Vascular Discovery: From Genes to Medicine Scientific Sessions, Seattle, Washington, May, 2022.
26. S. Neelakantan, A. Vang, P. Nicely, G. Choudhary, and **R. Avazmohammadi**. Mechanical remodeling of the RV and PA in PH. American Thoracic Society Conference, San Francisco, California, May, 2022.
25. S. Neelakantan, E.A. Mendiola, A. Burton, S. Sadayappan, Z. Wang, and **R. Avazmohammadi**. Stress relaxation behavior of left ventricular myocardium in mice. Experimental Biology, Philadelphia, Pennsylvania, April, 2022.
24. E.A. Mendiola, S. Merchant, Q. Xiang, S. Neelakantan, E. Hsu, P. Vanderslice, and **R. Avazmohammadi**. Identification of infarct border zone using late gadolinium enhanced MRI in rats. Experimental Biology, Philadelphia, Pennsylvania, April, 2022.
23. A. Clevenger, L. Crawford, D. Noltensmeyer, H. Babaei, S. Mabbott, **R. Avazmohammadi** and S. Raghavan. Novel 3D Biomimetic Peristalsis Bioreactor Capable of Multi-Axial Strain and Shear. Cellular and Molecular Bioengineering Conference, Indian Wells, California, January, 2022.
22. S. Neelakantan, Q. Xiang, S. Chavan, K. Li, X. Ling, R. Dixon, M. Sacks, P. Vanderslice, and **R. Avazmohammadi**. Structural remodeling in the left ventricular myocardium underlies systolic dysfunction in myocardial infarction. American Heart Association Scientific Sessions 2021, Virtual Event, November, 2021.
21. M. Keshavarzian, S. Neelakantan, L. McAllister, A. Leatherman, S. Frazier, C. Tong, and **R. Avazmohammadi**. Left ventricular free wall adaptations in heart failure with preserved ejection fraction: Insights from a murine model. American Heart Association Scientific Sessions 2021, Virtual Event, November, 2021.

20. H. Babaei, E. Mendiola and **R. Avazmohammadi**. A machine learning surrogate model to infer myocardial wall properties. Biomedical Engineering Society Annual Meeting, Orlando, Florida, October, 2021.
19. M. Keshavarzian, S. Neelakantan, L. McAllister, C. Tong and **R. Avazmohammadi**. An echocardiography-based approach toward myocardial stiffness quantification. Biomedical Engineering Society Annual Meeting, Orlando, Florida, October, 2021.
18. M. Keshavarzian, S. Chavan, E. Fugate, M. Arif, D. Lindquist, S. Sadayappan, and **R. Avazmohammadi**. An image registration framework to estimate 3D myocardial strains from cine cardiac MRI in mice. International Conference on Functional Imaging and Modeling of the Heart, Virtual Event, June, 2021.
17. S. Neelakantan, H. Babaei and **R. Avazmohammadi**. Effects of Covid-19 inflammation on the regional behavior of the lung: A computational study. Summer Biomechanics, Bioengineering, and Biotransport Conference, Virtual Event, June, 2021.
16. M. Keshavarzian, S. Neelakantan, L. McAllister, C. Tong, and **R. Avazmohammadi**. In-vivo estimation of myocardial elasticity in HFpEF using four-dimensional ultrasound imaging. Summer Biomechanics, Bioengineering, and Biotransport Conference, Virtual Event, June, 2021.
15. **R. Avazmohammadi**, A. Vang, S. Neelakantan, T. Mancini, D. da Silva Goncalves Bos, and G. Choudhary. Acute Functional Adaptation of the Right Ventricle in ARDS. American Thoracic Society Conference, Virtual Event, May, 2021.
14. D. Bos, D. Leichter, A. Vang, A. Nicolas, M. Nowruzpour, **R. Avazmohammadi**, O. Leary, T. Mancini, R. Gilbert, G. Choudhary. Right ventricular myoarchitecture is associated with RV function in pulmonary arterial hypertension. American Heart Association Scientific Sessions 2020, Virtual Event, November, 2020.
13. L. Crawford, M. Nowruzpour, **R. Avazmohammadi**, and S. Raghavan. Peristalsis bioreactor with concurrent multi-axial strain and shear stress to model mechanical microenvironment of the intestine. Biomedical Engineering Society Annual Meeting, Virtual Event, October, 2020.
12. E. Mendiola, D. Li, **R. Avazmohammadi**, F. Sachse, and M. Sacks. A high-fidelity 3D micromechanical model of myocardium in the hypertensive heart. Biomedical Engineering Society Annual Meeting, Virtual Event, October, 2020.
11. B. Jing, M. Tomov, A. Wijntjes, S. Bhamidipati, **R. Avazmohammadi**, H. Bauser-Heaton, V. Serpooshan, L. Brooks. Synthesis of ultrasound-compatible linear heart tube phantom using water-soluble 3D printed model for 3D ultrasound flow velocimetry. IEEE IUS 2020, Virtual Event, September, 2020.
10. M. Tomov, A. Kumar, S. Bhamidipati, K. Do, L. Ning, L. Perez, A. Cetnar, N. Panoskaltsis, **R. Avazmohammadi**, A. Mantalaris, H. Bauser-Heaton, V. Serpooshan. A personalized, 3D printed in vitro model of vascular anastomosis in single ventricle heart defects. BCVS Scientific Sessions, Virtual Event, July, 2020.
9. M. Tomov, A. Kumar, S. Bhamidipati, B. Jing, L. Ning, L. Perez, N. Panoskaltsis, B. Lindsay, **R. Avazmohammadi**, A. Mantalaris, V. Serpooshan, H. Bauser-Heaton. A 3D bioprinted platform for *in vitro* disease modeling & treatment planning in pulmonary vein stenosis pathology. BCVS Scientific Sessions, Virtual Event, July, 2020.

8. **R. Avazmohammadi**, E. Mendiola, R. Dixon, and M. Sacks. A multiscale model of cardiac remodeling under pulmonary arterial hypertension: From organ to titin. American Heart Association Scientific Sessions 2019, Philadelphia, Pennsylvania, November, 2019.
7. E. Mendiola, **R. Avazmohammadi**, and M. Sacks. Role of pericardium on cardiac function in normal and hypertensive hearts. Summer Biomechanics, Bioengineering, and Biotransport Conference, Seven Springs, Pennsylvania, June, 2019.
6. **R. Avazmohammadi**, H. Nguyen, A.K. Miri. Effects of bioink rheological properties on the stability of extrusion bioprinting. Material Research Society Meeting, Boston, Massachusetts, November, 2018.
5. E. Mendiola, H. Nguyen, **R. Avazmohammadi**, and M. Sacks. A computational study of the role of pericardium on cardiac function in normal and hypertensive hearts. Biomedical Engineering Society Annual Meeting, Atlanta, Georgia, October, 2018.
4. **R. Avazmohammadi** and M. Sacks. A novel structural constitutive model for passive right ventricular myocardium: Toward an understanding of remodeling during pulmonary hypertension. Summer Biomechanics, Bioengineering, and Biotransport Conference, National Harbor, Maryland, June, 2016.
3. **R. Avazmohammadi** and P. Ponte Castañeda. Homogenization-based model for macroscopic response, microstructure evolution, and macroscopic instability in particle-reinforced elastomers at finite deformations. SIAM Conference, Philadelphia, Pennsylvania, June 9-12, 2013.
2. P. Ponte Castañeda and **R. Avazmohammadi**. Fiber-reinforced polymeric material systems: A multi-scale, elasto-viscoplastic homogenization approach. NSF CMMI Conference, Boston, Massachusetts, June 9-12, 2012.
1. **R. Avazmohammadi** and P. Ponte Castañeda. On the effective post-bifurcation behavior of fiber-reinforced elastomeric composites under plane-strain loading. NSF CMMI Conference, Atlanta, Georgia, January 4-7, 2011.

RESEARCH SUPPORT

Current

NIH Pathway to Independence Award (R00HL138288), The effect of systemic hypertension on prognosis of myocardial infarction: Understanding, prediction, and therapy evaluation,
Duration: 04/15/2020-03/31/2024 (NCE)

NSF-BMMB Program, Collaborative Research (2244995), Changes and impact of right ventricle viscoelasticity under acute stress and chronic pulmonary hypertension,
Duration: 07/1/2023-06/30/2026 Other PIs: Dr. Zhijie Wang and Dr. Naomi Chesler

Completed

T3, Texas A&M University, Transmission Efficiency and Exposure Risks of COVID-19 Through Aerosols: Prediction and Mitigation,
Duration: 01/01/2021-12/31/2022

NIH Pathway to Independence Award (K99HL138288), The effect of systemic hypertension on prognosis of myocardial infarction: Understanding, prediction, and therapy evaluation,
Duration: 09/01/2018-12/31/2019

AHA Career Development Award (18CDA34110383), The effect of systemic hypertension on prognosis of myocardial infarction: Understanding, prediction, and design of stem cell interventions,
Duration: 07/01/2018-08/31/2018

NIH Postdoctoral Fellowship (F32HL132543), Adaptive remodeling of the right ventricle in response to pulmonary hypertension: towards physical understanding and prediction,
Duration: 05/01/2016-06/30/2018

TEACHING EXPERIENCE

Texas A&M University

- Soft Tissue Mechanics (BMEN 463/663) Spring 2021, 2022, 2023
- Orthopedic Biomechanics (BMEN 457/657) Spring 2020, Fall 2021, 2022, 2023

University of Texas at Austin

- Introduction to Computer Programming (ASE 301) Spring 2017

PROFESSIONAL SERVICES

NIH Research Proposal Reviewer

- Emerging Imaging Technologies and Applications (EITA) Study Section, Spring 2023.

NSF Research Proposal Reviewer

- Review Panel, Spring 2023.
- Review Panel, Spring 2022.
- Review Panel, Summer 2021.

AHA Research Proposal Reviewer

- Career Development Award Panel, Spring 2023.
- Career Development Award Panel, Spring 2022.

International Research Proposal Reviewer

- Catalan Biomedical Research Funding Programme (La Marató de TV3), Summer 2023.

University of Nebraska System Internal Grant Program

- Extramural Reviewer, Summer 2023.

Book Editor

- Machine Learning in Cardiovascular Biomechanics: Function, Diagnosis, and Prediction. Biomechanics of Living Organs Series, Vol. 5, Elsevier, To Be Published in 2024.

Journal Review Editor

- Frontiers in Physiology - Computational Physiology and Medicine
- Frontiers in Bioengineering and Biotechnology - Tissue Engineering and Regenerative Medicine

Conference Session Chair/Co-Chair

- Advancements in Experimental & Computational Cardiovascular Engineering, Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
- Computational and Multiscale Modeling in Biomechanics, Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
- Physics-Informed Modeling of Living Systems, Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
- Biomechanics session, International Conference on Functional Imaging and Modeling of the Heart, Lyon, France, June, 2023.
- Machine Learning in Cardiovascular Modeling and Simulations, Society of Engineering Science Annual Meeting, College Station, Texas, October, 2022.
- Cellular and Molecular Biomechanics: Mechanobiology, Biomedical Engineering Society Annual Meeting, Orlando, Florida, October, 2021.
- Matrix Effects in Mechanobiology, Biomedical Engineering Society Annual Meeting, Orlando, Florida, October, 2021.
- Thrombosis and Hemostasis, Biomedical Engineering Society Annual Meeting, Orlando, Florida, October, 2021.
- Biomechanics of Vascular Pathologies, Biomedical Engineering Society Annual Meeting, Philadelphia, Pennsylvania, October, 2019.
- Cardiac Mechanics III- Cardiac Function, 16th International Conference on Computer Methods in Biomechanics and Biomedical Engineering, NYC, New York, August, 2019.
- Maturation and Remodeling in Native and Engineered Soft Collagenous Tissues, U.S. National Congress on Computational Mechanic, Austin, Texas, July, 2019.
- Growth and Remodeling of Living Matter, 18th U.S. National Congress on Theoretical and Applied Mechanics, Rosemont, Illinois, June, 2018.
- Growth and Remodeling of Living Matter, Society of Engineering Science 54nd Annual Technical Meeting, Boston, Massachusetts, July, 2017.

Journal Reviewer

•Acta Biomaterialia •Annals of Biomedical Engineering •Biomaterials •Bioactive Materials •Biomechanics and Modeling in Mechanobiology •Biophysical Journal •Cardiovascular Engineering and Technology •Computer Methods in Biomechanics and Biomedical Engineering •Engineering with Computers •Experimental Mechanics •Frontiers in Bioengineering and Biotechnology •Frontiers in Physiology •International Journal of Solids and Structures •iScience •Journal of Biomechanics •Journal of Biomedical Engineering •Journal of Elasticity •Journal of the Mechanical Behavior of Biomedical Materials •Journal of the Mechanics and Physics of Solids •Journal of the Royal Society Interface •Medical & Biological Engineering & Computing •MDPI Bioengineering •MDPI Cells •Medical Physics •Nanoscale •PLOS One •PLOS Computational Biology •Quantitative Imaging in Medicine and Surgery •Scientific Reports

Conference Abstract Reviewer

- Biomedical Engineering Society Annual Meeting, Seattle, Washington, October, 2023.
- Summer Biomechanics, Bioengineering, and Biotransport, Vail, Colorado, June, 2023.
- Biomedical Engineering Society Annual Meeting, Orlando, Florida, October, 2021.
- Summer Biomechanics, Bioengineering, and Biotransport, Virtual, June, 2021.
- Biomedical Engineering Society Annual Meeting, Virtual, October, 2020.
- Summer Biomechanics, Bioengineering, and Biotransport, Virtual, June, 2020.
- Biomedical Engineering Society Annual Meeting, Philadelphia, Pennsylvania, October, 2019.
- Summer Biomechanics, Bioengineering, and Biotransport, Seven Springs, Pennsylvania, June, 2019.
- Biomedical Engineering Society Annual Meeting, Atlanta, Georgia, October, 2018.
- Society of Engineering Science 54nd Annual Technical Meeting, Northwestern University, July, 2017.

Professional Affiliation

- American Heart Association (AHA)
 - Council on Basic Cardiovascular Sciences (BCVS)
 - Council on Cardiovascular Radiology and Intervention (CVRI)
- American Society of Mechanical Engineers (ASME)
- American Thoracic Society (ATS)
- Biomedical Engineering Society (BMES)
- Computing in Cardiology (CinC)
- European Society of Cardiology (ESC)
 - Working Group on e-Cardiology
 - European Association of Cardiovascular Imaging (EACVI)
- Functional Imaging and Modeling of the Heart (FIMH)
- Society of Engineering Science (SES)
- Society of Photo-Optical Instrumentation Engineers (SPIE)
- United States Association for Computational Mechanics (USACM)