BRUNO V. REGO

Assistant Professor

Principal Investigator, Cardiovascular Engineering Lab
Department of Biological & Agricultural Engineering • Louisiana State University (LSU)
149 E. B. Doran Hall, Baton Rouge, LA 70803-4505 • Email: brego@lsu.edu
Google Scholar • ResearchGate • ORCID • LinkedIn

EDUCATION

2019 **Ph.D., Biomedical Engineering**
The University of Texas at Austin (UT Austin)
Dissertation: "Remodeling of the mitral valve: an integrated approach for predicting long-term outcomes in disease and repair"
Supervisor: Dr. Michael S. Sacks

2016 **M.S.E., Biomedical Engineering,** UT Austin

2014 **B.S. (with Highest Honor), Biomedical Engineering**
Georgia Institute of Technology (Georgia Tech)
Minor: Chemistry

PROFESSIONAL EXPERIENCE

08/2023–Present **Assistant Professor,** Department of Biological & Agricultural Engineering, LSU

02/2020–08/2023 **Postdoctoral Associate,** Department of Biomedical Engineering, Yale University

FUNDING

04/2026–03/2028 **"Stent-based sensor system for continuous monitoring of mechanical biomarkers during vascular diseases"**
- Multi-investigator award with Dr. Robert Herbert (PI, LSU) and Dr. B.V. Rego (Co-I, LSU)
- Source: National Institutes of Health (NIH), National Institute of Biomedical Imaging and Bioengineering (NIBIB)
- Award type/ID: Small Research Grant, R03 EB038659
- Total award: **$143,201**

06/2025–06/2028 **"A deep operator network model to enable personalized hydrogel injection therapies after heart attack"**
- Source: Louisiana Board of Regents Support Fund (BoRSF)
- Award type/ID: Research Competitiveness Subprogram (RCS)
- Total award: **$189,030**

01/2025–06/2026 **"Leveraging electronic health records and advanced image processing to identify and address disparities in the diagnosis and treatment of valvular heart disease"**
- Multi-investigator award with Dr. B.V. Rego (PI, LSU) and Dr. Jorge A. Castellanos (Co-I, Our Lady of the Lake Regional Medical Center)
- Source: LSU Foundation, with funds from Our Lady of the Lake Health
- Award type/ID: Collaboration in Action Program
- Total award: **$111,182**

01/2025–12/2025 **"Sensor-embedded vascular graft for wireless monitoring of hemodialysis patients"**
- Multi-investigator award with Dr. Robert Herbert (PI, LSU), Dr. B.V. Rego (Co-I, LSU), and Dr. Hector Ferral (Co-I, LSU Health New Orleans)
- Source: LSU Provost's Fund for Innovation in Research
- Award type/ID: Big Ideas in STEM and Social & Behavioral Sciences

- Total award: **$50,000**

07/2018–06/2020 **"Characterization of patient-specific mitral valve remodeling to improve surgical repair"**

- Source: American Heart Association (AHA)
- Award type/ID: Predoctoral Fellowship, 18PRE34030258
- Total award: **$53,688**
- 0.19% percentile rank (top score out of 534 proposals)
- Terminated in 01/2020 after completion of Ph.D.

06/2015–05/2018 **"A coupled mitral valve–left ventricle model for improved mitral valve repair"**

- Source: National Science Foundation (NSF)
- Award type/ID: Graduate Research Fellowship, DGE-1610403
- Total award: **$138,000**

HONORS & AWARDS

2023 **Top Cited Article,** International Journal for Numerical Methods in Biomedical Engineering
2022 **Journal Cover Feature,** Annals of Biomedical Engineering
2021 **Journal Cover Feature,** International Journal for Numerical Methods in Biomedical Engineering
2020 **Top 10% Article,** International Journal for Numerical Methods in Biomedical Engineering
2019–2020 **Engineering Foundation Endowed Graduate Presidential Scholarship,** $2,900
2019 **Top 20 Article,** International Journal for Numerical Methods in Biomedical Engineering
2019 **Journal Cover Feature,** Annals of Biomedical Engineering
2018 **Journal Cover Feature,** International Journal for Numerical Methods in Biomedical Engineering
2016–2019 **Professional Development Award (UT Austin Graduate School),** $830
2015–2019 **LeRoy H. Cole Endowed Graduate Fellowship in Engineering,** $36,000
2015–2019 **Dean's Prestigious Fellowship Supplement,** $8,700
2014–2015 **Thomas Marschall Runge, M.D. Endowed Presidential Fellowship,** $3,500
2014 **CRLA International Tutor Training Program Certification,** Level III – Certified Master Tutor
2013 **President's Undergraduate Research Award,** $1,500
2010–2014 **Sidney Goldin Scholarship,** $24,600
2010–2011 **George W. Woodruff Scholarship,** $4,000
2010–2011 **ED Academic Competitiveness Grant,** $750

RESEARCH

08/2023–Present **Principal Investigator, Cardiovascular Engineering Lab, Department of Biological & Agricultural Engineering, LSU**

- Leading an interdisciplinary research program that integrates experimental biomechanics, multiscale biological measurements, and computational modeling to study cardiovascular development, aging, and disease
- Developing mechanistic and machine learning-based methods for prediction of cardiovascular growth, remodeling, and dysfunction from clinical and experimental data
- Creating and applying translational sensing and modeling platforms to enable longitudinal assessment of cardiovascular health

02/2020–08/2023 **Postdoctoral Associate, Continuum Biomechanics Lab (PI: Dr. Jay D. Humphrey), Department of Biomedical Engineering, Yale University**

- Developed a multiscale modeling framework for postnatal development and maturation of the thoracic aorta
- Investigated aortic function and remodeling in Marfan syndrome under normal and inhibited collagen cross-linking
- Developed machine learning models to predict progression of aortic dissections and causes of aortic aneurysms
- Implemented uncertainty quantification in network models of mechanotransduction and intracellular signaling
- Derived Bayesian methods to quantify uncertainties in image-based estimates of vessel mechanical properties, with applications to the study of abdominal aortic aneurysms (AAAs) with varying degree of intraluminal thrombus

08/2014–01/2020 **NSF Graduate Research Fellow & AHA Predoctoral Fellow, James T. Willerson Center for Cardiovascular Modeling and Simulation (PI: Dr. Michael S. Sacks), Oden Institute for Computational Engineering and Sciences, UT Austin**

- Developed predictive models of heart valve growth and remodeling that integrate tissue and cellular responses, with applications to both non-pathological (e.g., pregnancy) and pathological (e.g., infarction) perturbations
- Studied the effects of myocardial infarction on the *in vivo* geometry, structure, and deformation of the mitral valve
- Developed computational methods and clinical tools for real-time assessment of heart valve function
- Quantified structural and mechanical properties of heart valve tissues
- Formulated and validated structural constitutive models for heart valve leaflets

08/2013–12/2013 **Senior Design Project Leader, Department of Biomedical Engineering, Georgia Tech**

- Partnered with a local cardiothoracic surgeon to identify needs for medical device innovation in cardiac surgery
- Led a team of 4 students to design a novel dual-function Yankauer wand for use in coronary anastomosis surgery
- Presented a functional prototype of the device at the Georgia Tech Capstone Design Expo (runner-up for Best Biomedical Engineering Project)

01/2012–08/2013 **Undergraduate Research Assistant, Sulchek BioMEMS & Biomechanics Lab (PI: Dr. Todd A. Sulchek), Parker H. Petit Institute for Bioengineering and Bioscience, Georgia Tech**

- Designed and manufactured a high-throughput microfluidic device to sort cell-like particles by size
- Led a project to characterize the thermal bonding properties of cast and extruded PMMA acrylic
- Mentored new lab members in laser cutting, engraving, and marking for the fabrication of microfluidic devices

01/2012–05/2012 **Member, Computational Structural Biology Team (PI: Dr. Stephen C. Harvey), Vertically Integrated Projects Program, Georgia Tech**

- Tested and compared the performance of various energy minimization algorithms for modeling van der Waals interactions between noble gas atoms and polyatomic molecules
- Developed web-based tutorials for simulating 3D biomolecular dynamics, to be used as instructional material in *BIOL 4105/7110: Macromolecular Modeling*

Journal articles, book chapters, published abstracts, and conference presentations are listed starting on page 9.

TEACHING

01/2024–Present **Instructor, Department of Biological & Agricultural Engineering, LSU**

- Redesigned and taught *BE 2352: Quantitative Biology in Engineering* (Fall semesters, 2024–Present) – Characterization of biological phenomena in engineering design; relationships among parameters using linear and nonlinear statistical expressions; case studies of engineering design solutions
- Designed, taught, and added to course catalog *BE 4382: Biological Engineering Applications of Data Analysis and Modeling* (Spring semesters, 2024 & 2025) – Applications in biological engineering research, analysis, and design of mathematical and computational modeling methods, with case studies and situation descriptions of analytical systems and applications

09/2022–11/2022 **Student, *An Introduction to Evidence-Based Undergraduate STEM Teaching*, Center for the Integration of Research, Teaching and Learning (CIRTL)**

- Explored key learning principles, such as the role of students' prior knowledge, mental models, and knowledge organization, as well as effective approaches for providing feedback and designing assessments
- Developed strategies for fostering inclusive classroom environments, with an emphasis on how to draw on diversity in the development of teaching plans and how inequities can negatively impact learning if not addressed
- Created an annotated active learning-based lesson plan for an undergraduate-level engineering course

01/2016–05/2016 **Student, *ME 397: Teaching Engineering*, UT Austin**

- Led and participated in thorough discussions of STEM educational theory, trends in university-level engineering education, inductive and deductive learning, problem-based learning, and metacognition
- Developed active learning modules and implemented traditional and novel teaching methods in the classroom

- Practiced evidence-guided syllabus design for core engineering courses and technical electives

08/2013–05/2014 **One-to-One Tutor, Center for Academic Success, Georgia Tech**

- Tutored undergraduate students in 12 math, science, and engineering courses for 230 cumulative hours
- Completed 15 weeks of formal training in technical instruction and tutoring at the Center for the Enhancement of Teaching and Learning at Georgia Tech
- Gained sufficient training and hands-on experience to receive a Level III Master Tutor certification (highest available) from the College Reading and Learning Association (CRLA)

08/2013–12/2013 **Teaching Assistant, Department of Biomedical Engineering, Georgia Tech**

- Aided in the coordination of group projects in *BMED 3510: Biomedical Systems and Modeling*
- Led recitation sessions in MATLAB/Simulink modeling of physiological and biomedical systems
- Helped grade class assignments as well as compile supplementary lecture materials and problem solutions

MENTORING & ADVISING

09/2023–Present **Department of Biological & Agricultural Engineering, LSU**

- Mentoring graduate and undergraduate research assistants in the Cardiovascular Engineering Lab
- Serving as a faculty advisor to help undergraduate students adjust their plan of study, establish their career path, and identify/utilize on-campus resources to ensure academic success
- Designed and developed a web-based interactive tool for undergraduate students to plan their course of study and path to graduation within the Biological Engineering major
- Designed and developed a digital program-of-study tool for Ph.D. students to plan and automatically track their progress in fulfilling degree coursework requirements
- Serving/served as a faculty advisor for *BE 4390/4392: Senior Engineering Design* to guide students as they design, construct, and evaluate novel devices for the following applications: fabrication of customizable glass cannulae (2026–2027), biaxial tensile testing of planar soft tissues (2025–2026), mechanical testing of isolated muscle specimens (2024–2025), high-throughput sectioning of soybeans (2023–2024)

07/2021–05/2022 **Department of Biomedical Engineering, Yale University**

- Mentored a first-year medical student (Yale School of Medicine) in segmentation of elastin fibers from Verhoeff-stained slides to find correlations between elastin microstructure and thoracic aortic aneurysm characteristics
- Mentored an undergraduate student whose Senior Project focused on quantitative assessment of collagen fibril structure in Marfan syndrome using transmission electron microscopy (TEM) images
- Supervised a visiting student in analysis of histological stains of human aortic tissues to quantify lamellar and interlamellar elastin content using machine learning, probabilistic segmentation, and interactive validation

01/2015–01/2020 **Willerson Center, Oden Institute, UT Austin**

- Mentored lab members in the experimental characterization of heart valve leaflet structure and properties, especially through biaxial tensile testing and small-angle light scattering (SALS)
- Served as a graduate mentor for the Moncrief Undergraduate Summer Internship Program (2018), and supervised a visiting student in medical image segmentation and patient-specific modeling of mitral valve repair
- Led a team of 5 undergraduate students to design, manufacture, and validate a biaxial mechanical testing device for the characterization of planar soft tissues

Graduate Research Assistants, College of Engineering, LSU

1. Pegah Naghshnejad (Ph.D., Chemical Engineering, 2026–Present, co-advised with Drs. José A. Romagnoli and Revati Kumar)
2. Edwin Lowery (Ph.D., Biological Engineering, 2025–Present)
3. Raymond Martin (M.S., Biological & Agricultural Engineering, 2025–2026)
4. Hannah Bengtson (Ph.D., Biological Engineering, 2024–Present)

Undergraduate Research Assistants, College of Engineering, LSU

1. Radia Karim (2026–Present)
2. Micah Green (2026–Present)
3. Andi Jane Smith (2025–Present)
4. Ashleigh Phillips (Distinguished Undergraduate Researcher Program, 2024–Present)
5. Cohen Roussel (2025–2026)
6. Evan White (2026)
7. Allyson Zylicz (2024–2025)
8. Raymond Martin (2024–2025)
9. Maximilien Caffery (Distinguished Undergraduate Researcher Program, 2024–2025)
10. Victoria Sartin (Distinguished Undergraduate Researcher Program, 2024–2025)
11. Ty Watson (2024)
12. Hobbs McAllister (2024)
13. Anna Claire Ricks-Boyd (2024)

High School Summer Research Assistants, College of Engineering, LSU

1. Madison Nguyen-Hong (2026)

Senior Engineering Design Teams, Department of Biological & Agricultural Engineering, LSU

2026–2027:

1. Mia Burtch-Mince
2. Brooklyn Duay
3. Grant Harris
4. Caitlin Rouse
5. Julia Sutton
6. April Wang

2025–2026 (participated in NIBIB/VentureWell DEBUT Challenge):

1. Andrew Beard
2. Hanna DeVillier
3. Giancarlo Lara
4. Enson Li
5. Evan McConnell
6. Mayar Nickols

2024–2025 (3rd-highest scoring engineering design team, LSU Discover Day):

1. Maximilien Caffery
2. Raymond Martin
3. Hobbs McAllister
4. Victoria Sartin
5. Catherine Whitehead

2023–2024 (1st place, AGCO National Student Design Competition):

1. Madisson Boutte
2. Eva Counts
3. Oliver Deal
4. Khai LeJeune
5. Elizabeth Peters
6. Mikayla Powell

Undergraduate Research Assistants, School of Engineering & Applied Science / School of Medicine, Yale University

1. Matthew Windross (Senior Project, 2022)
2. Sophia Lovoulos (invited from Rutgers University, Vascular Biology and Therapeutics Program, 2021)

Undergraduate Research Assistants, Willerson Center, Oden Institute, UT Austin

1. Iris Chang (invited from Duke University, Moncrief Undergraduate Summer Internship Program, 2018)
2. Jessica Kim (2017–2018)
3. Ethan Kwan (2015–2018)
4. Michelle Lu (2015–2018)
5. Nivedha Ravi (2017)
6. Thomas Leahy (2016–2017)
7. Elizabeth Shih (2015–2017)
8. Steven LaBelle (2016)
9. Samuel Petter (2016)
10. Mitchell Katona (2015–2016)

Member of the following Ph.D. dissertation and M.S. thesis committees:

2026–Present Pegah Naghshnejad *(as Co-Chair)*, Cain Department of Chemical Engineering, LSU
2025–Present Edwin Lowery *(as Major Professor)*, Department of Biological & Agricultural Engineering, LSU
2025–2026 Raymond Martin *(as Major Professor)*, Department of Biological & Agricultural Engineering, LSU
2024–Present Hannah Bengtson *(as Major Professor)*, Department of Biological & Agricultural Engineering, LSU
2025–Present Anish Maharjan, Department of Mechanical Engineering, LSU
2025–Present Gabriela Lima *(as Dean's Representative)*, Department of Biological Sciences, LSU
2023–Present Cheng "Jimmy" Lu *(as Dean's Representative)*, Department of Comparative Biomedical Sciences, LSU

Member of the following honors capstone thesis committees:

2026 Evan McConnell *(as Capstone Director)*, Department of Biological & Agricultural Engineering, LSU
2025 Raymond Martin *(as Capstone Director)*, Department of Biological & Agricultural Engineering, LSU
2025 Victoria Sartin *(as Capstone Director),* Department of Biological & Agricultural Engineering, LSU

DEPARTMENTAL, COLLEGE, & INSTITUTIONAL SERVICE

Member of the following departmental committees:

2026–Present ABET Self-Study Report Committee
2023–Present LSU Biological Engineering Graduate Committee
2022–2023 Yale Biomedical Engineering Committee for Diversity, Equity, Inclusion, and Belonging

Member of the following college committees:

2025 Grade appeal hearing panel (LSU College of Engineering)
2024 Selection committee for the Donald W. Clayton Ph.D. Graduate Assistantship Supplement ($45,000 per award)

PROFESSIONAL SERVICE

Editor of the following special issues:

1. **Rego BV,** Khang A, Ravishankar P (editors). "Biomaterials and Biomechanics Studies in Tissue Engineering." Journal of Functional Biomaterials. 2027.
2. **Rego BV,** Cavinato C, Niestrawska JA, Bersi MR (editors). "Multiscale Characterization, Modeling, and Engineering of Cardiovascular Tissues." Frontiers in Mechanical Engineering. 2026.

Associate Editor for the following journals:

1. Frontiers in Bioengineering and Biotechnology (Tissue, Cellular, and Organ Biomechanics section)

Reviewer for the following journals:

1. Acta Biomaterialia
2. Annals of Biomedical Engineering
3. Biomechanics and Modeling in Mechanobiology (BMMB)
4. Computer Methods in Applied Mechanics and Engineering (CMAME)
5. Diagnostics
6. European Journal of Medical Research (EJMR)
7. Frontiers in Bioengineering and Biotechnology
8. Frontiers in Cardiovascular Medicine
9. Frontiers in Physiology – Vascular Physiology *(as community reviewer)*
10. Journal of Biomechanical Engineering (JBME)
11. Journal of Biomechanics
12. Journal of Clinical Medicine (JCM)
13. Journal of Functional Biomaterials (JFB)
14. Journal of Personalized Medicine (JPM)
15. Journal of Visualized Experiments (JoVE)
16. PLoS Computational Biology
17. PLoS One
18. Scientific Reports

Reviewer for the following grant and fellowship programs:

2025 Swiss National Science Foundation ($930,000)
2024 NSF Graduate Research Fellowship Program ($159,000 per award)
2022 Additional Ventures, Single Ventricle Research Fund (up to $600,000 per award)

Reviewer for the following conferences:

2024 Summer Biomechanics, Bioengineering and Biotransport Conference (SB^{3}C, Lake Geneva, Wisconsin)
2023 Summer Biomechanics, Bioengineering and Biotransport Conference – including the Ph.D. Student Paper Competition (SB^{3}C, Vail, Colorado)
2022 Biomedical Engineering Society (BMES) Annual Meeting (San Antonio, Texas)
2022 Summer Biomechanics, Bioengineering and Biotransport Conference (SB^{3}C, Cambridge, Maryland)
2021 Summer Biomechanics, Bioengineering and Biotransport Conference (SB^{3}C, Virtual Conference)
2019 15th U.S. National Congress on Computational Mechanics (USNCCM, Austin, Texas)

Member of the following professional committees:

2021–Present ASME-BED Solid Mechanics Technical Committee
2020–Present IMAG/MSM Consortium Committee on Credible Practice of Modeling & Simulation (CPMS) in Healthcare
2018–2020 SIAM Activity Group on Computational Science and Engineering
2018–2020 SIAM Activity Group on Life Sciences
2017–2020 AHA Council on Basic Cardiovascular Sciences

PROFESSIONAL SOCIETY MEMBERSHIPS

(Past and present)

1. American Heart Association (AHA)
2. American Society of Mechanical Engineers, Bioengineering Division (ASME-BED)
3. Biomedical Engineering Society (BMES)

4. Engineering World Health (EWH)
5. Interagency Modeling and Analysis Group (IMAG)
6. Multiscale Modeling (MSM) Consortium
7. Society for Industrial and Applied Mathematics (SIAM)
8. The Tau Beta Pi Association (Engineering Honor Society)

COMMUNITY OUTREACH

2025	Participated in "LSU Discover Day," an annual undergraduate research and creativity conference. Mentored two teams of students who presented their work.
2024	Served as an advisor for a team of high school students competing in Science Olympiad.
2023	Served as a judge for the Connecticut Science & Engineering Fair (middle school and high school levels, Engineering category).
2022	Participated in a BMES Diversity Committee special session to address inclusion in STEM for people with disabilities. Identified attitudinal and physical barriers faced by scientists with disabilities at different career stages, and discussed social, architectural, and technological solutions to ensure inclusivity.
2021	Participated in "The Promise of NHLBI Data Science Workshop" (NIH, virtual meeting). Addressed knowledge gaps in understanding and utilizing NHLBI health datasets (e.g., BioData Catalyst), and facilitated collaborations between domain experts and computer scientists, engineers, and statisticians.
2018, 2019	Volunteered at "Explore UT," an annual event that aims to broaden the horizons of K-12 students in Texas and motivate them toward pursuing higher education after high school. Directed a lecture and Q&A session geared toward high school students about cardiovascular disease, treatment/prevention thereof, and emerging research in the field.
2017–2018	Served as a Life Sciences Industry Liaison in the Society for Industrial and Applied Mathematics (SIAM, Austin Chapter).
2017	Volunteered at "Introduce a Girl to Engineering Day" (UT Austin). Collaborated with Women in Biomedical Engineering (WBME) to enact an activity in which 4th-8th grade students iteratively designed, created, and tested their own prosthetic hand devices.
2016	Participated in and presented work at the 7th Summer School on Biomechanics of Soft Tissues: Multiscale Modeling, Simulation, and Applications (Graz, Austria).
2016	Developed and organized an educational activity to teach middle school students about RNA processing and protein synthesis. Activity was enacted at a "Hot Science – Cool Talks" outreach event at UT Austin.
2015	Served as a Graduate Student Recruitment Liaison for the Department of Biomedical Engineering at UT Austin. Introduced prospective graduate students to the program, university, and city. Organized and attended recruitment-related lab tours, poster sessions, faculty/student meetings, and a welcome dinner.
2012–2014	Tutored elementary and middle school children in low-income areas of Atlanta as part of a STEM education outreach program organized by The Tau Beta Pi Association.
2011–2013	Volunteered at MedShare (Atlanta, GA) to receive hospital and manufacturer donations of surplus medical supplies and equipment. Helped repair and repackage equipment as needed so that it could be redistributed to healthcare facilities in developing countries.

MEDIA COVERAGE

1. "Early research impacts: Catching up with the inaugural Collaboration in Action teams." December 10, 2025. LSU.
2. "LSU BAE professor receives CAP award for cardiovascular research with OLOL." February 3, 2025. LSU. YouTube.
3. "Researchers develop computational model for heart valve." February 15, 2019. The Daily Texan.
4. "3D imaging technique enables customized care for mitral valve disease patients." February 12, 2019. Health Imaging.

5. "Researchers use modeling technique to give heart patients customized care." February 7, 2019. Becker's Hospital Review.
6. "Patient-specific treatment for heart valve disease possible with new computational modeling technique." February 1, 2019. Weekly Wall.
7. "A new way to model the heart valve." January 31, 2019. Medical Device and Diagnostic Industry.
8. "Computational model of heart's mitral valve to predict surgery outcomes." January 31, 2019. Medgadget.
9. "Computational model of the heart's mitral valve enables customized care for patients." January 30, 2019. News Medical.
10. "New heart valve modeling technique enables customized medical care for patients." January 29, 2019. UT News. EurekAlert. ScienceDaily. Primeur Magazine.
11. "UT ranked 12th in the nation for NSF fellowship recipients." April 21, 2015. The Daily Texan.

INVITED LECTURES & SEMINARS

1. "Predictive Multiscale Models of Cardiovascular Biomechanics and Mechanobiology." Department of Biomedical Engineering, University of Rochester. Rochester, New York, March 20, 2023.
2. "Predictive Multiscale Models of Cardiovascular Biomechanics and Mechanobiology." Department of Biomedical Engineering, Carnegie Mellon University. Pittsburgh, Pennsylvania, March 16, 2023.
3. "Multiscale Modeling and Simulation of Cardiovascular Tissues for *In Vivo* Diagnostic and Prognostic Applications." Department of Biological & Agricultural Engineering, Louisiana State University. Baton Rouge, Louisiana, March 6, 2023.
4. "The Promise of Computational Biomechanics to Improve Therapies for Cardiovascular Disease." Department of Biomedical Engineering and Mechanics, Virginia Tech. Blacksburg, Virginia, February 27, 2023.
5. "Predictive Multiscale Models of Cardiovascular Biomechanics and Mechanobiology." School of Mechanical Engineering, Purdue University. West Lafayette, Indiana, February 20, 2023.
6. "Remodeling of the Mitral Valve: An Integrated Approach for Predicting Long-term Outcomes in Disease and Repair." Department of Biomedical Engineering, Yale University. New Haven, CT, August 13, 2019.
7. "Computational Modeling of the Mitral Valve to Improve Surgical Repair Outcomes." Topic lecture on computational medicine for *ME 397: Clinical Cardiology*, taught by Dr. H. Kent Beasley. Department of Mechanical Engineering, The University of Texas at Austin. Austin, Texas, November 29, 2017.

JOURNAL ARTICLES

Annotations: [c] = corresponding author, [g] = graduate research assistant, [u] = undergraduate research assistant

1. **Rego BV,[c]** Cavinato C, Niestrawska JA, Bersi MR. "Editorial: Advancements in multiscale characterization and modeling of cardiovascular tissues." Frontiers in Mechanical Engineering. 2026 Jul 19;12:1913518.
2. Martin RJ,[g] **Rego BV.[c]** "Cardiovascular scaling between humans and mice during postnatal development." American Journal of Physiology-Heart and Circulatory Physiology. 2026 Mar 04;330(4):H1129-H1140.
3. Manchel A, Erdemir A, Mulugeta L, Ku JP, **Rego BV,** Horner M, Lytton WW, Myers JG, Vadigepalli R. "A rubric for assessing conformance to the Ten Rules for credible practice of modeling and simulation in healthcare." PLoS One. 2025 Jun 25;20(6):e0313711.
4. **Rego BV,** Murtada SI, Li G, Tellides G, Humphrey JD. "Multiscale insights into postnatal aortic development." Biomechanics and Modeling in Mechanobiology. 2024 Apr 01;23(2):687-701.
5. Machaidze Z, D'Amore A, Freitas RCC, Joyce AJ, Bayoumi A, Rich K, Brown DW, Aikawa E, Wagner WR, **Rego BV,** Mayer JE. "Tissue formation and host remodeling of an elastomeric biodegradable scaffold in an ovine pulmonary leaflet replacement model." Journal of Biomedical Materials Research Part A. 2024 Feb 01;112(2):276-287.

6. **Rego BV,** Weiss D, Humphrey JD. “A fast, robust method for quantitative assessment of collagen fibril architecture from transmission electron micrographs.” Microscopy and Microanalysis. 2023 Dec 01;29(6):2099-2107.
7. Weiss D, **Rego BV,** Cavinato C, Li DS, Kawamura Y, Emuna N, Humphrey JD. “Effects of age, sex, and extracellular matrix integrity on aortic dilatation and rupture in a mouse model of Marfan syndrome.” Arteriosclerosis, Thrombosis, and Vascular Biology. 2023 Sep 01;43(9):e358-e372.
8. **Rego BV,** Khalighi AH, Gorman JH, Gorman RC, Sacks MS. “Simulation of mitral valve plasticity in response to myocardial infarction.” Annals of Biomedical Engineering. 2023 Jan 01;51(1):71-87.
9. **Rego BV,** Khalighi AH, Lai EK, Gorman RC, Gorman JH, Sacks MS. “In vivo assessment of mitral valve leaflet remodelling following myocardial infarction.” Scientific Reports. 2022 Oct 26;12:18012.
10. Goswami S,* Li DS,* **Rego BV,** Latorre M, Humphrey JD, Karniadakis GE. “Neural operator learning of heterogeneous mechanobiological insults contributing to aortic aneurysms.” Journal of the Royal Society Interface. 2022 Aug 31;19(193):20220410. *These authors contributed equally.
11. McGregor GL, **Rego BV,** Diller KR. “Mathematical model for combined effects of temperature and pressure in causing soft tissue injury.” Journal of Heat Transfer. 2022 Feb 14;144(3):031001.
12. Yin M, Ban E, **Rego BV,** Zhang E, Cavinato C, Humphrey JD, Karniadakis GE. “Simulating progressive intramural damage leading to aortic dissection using DeepONet: an operator–regression neural network.” Journal of the Royal Society Interface. 2022 Feb 09;19(187):20210670.
13. **Rego BV,** Pouch AM, Gorman JH, Gorman RC, Sacks MS. “Patient-specific quantification of normal and bicuspid aortic valve leaflet deformations from clinically derived images.” Annals of Biomedical Engineering. 2022 Jan 07;50(1):1-15.
14. Estrada AC, Irons L, **Rego BV,** Li G, Tellides G, Humphrey JD. “Roles of mTOR in thoracic aortopathy understood by complex intracellular signaling interactions.” PLoS Computational Biology. 2021 Dec 13;17(12):e1009683.
15. Narang H, **Rego BV,** Khalighi AH, Aly A, Pouch AM, Gorman RC, Gorman JH, Sacks MS. “Pre-surgical prediction of ischemic mitral regurgitation recurrence using in vivo mitral valve leaflet strains.” Annals of Biomedical Engineering. 2021 Dec 01;49(12):3711-3723.
16. **Rego BV,** Weiss D, Bersi MR, Humphrey JD. “Uncertainty quantification in subject-specific estimation of local vessel mechanical properties.” International Journal for Numerical Methods in Biomedical Engineering. 2021 Oct 04;37(12):e3535.
17. Weiss D,* Latorre M,* **Rego BV,** Cavinato C, Tanski BJ, Berman AG, Goergen CJ, Humphrey JD. “Biomechanical consequences of compromised elastic fiber integrity and matrix cross-linking on abdominal aortic aneurysmal enlargement.” Acta Biomaterialia. 2021 Jul 29;134:422-434. *These authors contributed equally.
18. Castillero E, Howsmon DP, **Rego BV,** Keeney S, Driesbaugh KH, Kawashima T, Xue Y, Camillo C, George I, Gorman RC, Gorman JH, Sacks MS, Levy RJ, Ferrari G. “Altered responsiveness to TGFβ and BMP and increased CD45+ cell presence in mitral valves are unique features of ischemic mitral regurgitation.” Arteriosclerosis, Thrombosis, and Vascular Biology. 2021 Apr 08;41(6):2049-2062.
19. Howsmon DP,* **Rego BV,*** Castillero E, Ayoub S, Khalighi AH, Gorman RC, Gorman JH, Ferrari G, Sacks MS. “Mitral valve leaflet response to ischaemic mitral regurgitation: from gene expression to tissue remodelling.” Journal of the Royal Society Interface. 2020 May 06;17(166):20200098. *These authors contributed equally.
20. Sacks MS, Drach A, Lee CH, Khalighi AH, **Rego BV,** Zhang W, Ayoub S, Yoganathan AP, Gorman RC, Gorman JH. “On the simulation of mitral valve function in health, disease, and treatment.” Journal of Biomechanical Engineering. 2019 Jul 01;141(7):070804.
21. Khalighi AH, **Rego BV,** Drach A, Gorman RC, Gorman JH, Sacks MS. “Development of a functionally equivalent model of the mitral valve chordae tendineae through topology optimization.” Annals of Biomedical Engineering. 2019 Jan 15;47(1):60-74.
22. **Rego BV,** Khalighi AH, Drach A, Lai EK, Pouch AM, Gorman RC, Gorman JH, Sacks MS. “A noninvasive method for the determination of in vivo mitral valve leaflet strains.” International Journal for Numerical Methods in Biomedical Engineering. 2018 Dec 04;34(12):e3142.

23. Sacks MS, Khalighi A, **Rego B,** Ayoub S, Drach A. “On the need for multi-scale geometric modelling of the mitral heart valve.” Healthcare Technology Letters. 2017 Oct 25;4(5):150.
24. **Rego BV,** Sacks MS. “A functionally graded material model for the transmural stress distribution of the aortic valve leaflet.” Journal of Biomechanics. 2017 Mar 21;54:88-95.
25. **Rego BV,** Wells SM, Lee CH, Sacks MS. “Mitral valve leaflet remodelling during pregnancy: insights into cell-mediated recovery of tissue homeostasis.” Journal of the Royal Society Interface. 2016 Dec 07;13(125):20160709.

BOOK CHAPTERS

1. Khang A, Buchanan RM, Ayoub S, **Rego BV,** Lee CH, Sacks MS. “Biological mechanics of the heart valve interstitial cell.” Advances in Heart Valve Biomechanics: Valvular Physiology, Mechanobiology, and Bioengineering. 2019 Mar 14:3-36.
2. **Rego BV,** Wells SM, Lee CH, Sacks MS. “Remodelling potential of the mitral heart valve leaflet.” Advances in Heart Valve Biomechanics: Valvular Physiology, Mechanobiology, and Bioengineering. 2019 Mar 14:181-206.
3. Khalighi AH, **Rego BV,** Drach A, Gorman RC, Gorman JH, Sacks MS. “Towards patient-specific mitral valve surgical simulations.” Advances in Heart Valve Biomechanics: Valvular Physiology, Mechanobiology, and Bioengineering. 2019 Mar 14:471-487.
4. Khang A, Buchanan RM, Ayoub S, **Rego BV,** Lee CH, Ferrari G, Anseth KS, Sacks MS. “Mechanobiology of the heart valve interstitial cell: simulation, experiment, and discovery.” Mechanobiology in Health and Disease. 2018 Aug 01:249-283.

PUBLISHED ABSTRACTS

1. Martin R,[g] **Rego B.[c]** “Joint modeling of readmission and post-discharge mortality after surgical and transcatheter aortic valve replacement.” Circulation. 2026 Nov 02;154(sup1):A11005.
2. Jung J, Manchel A, Myers J, Vadigepalli R, Lytton W, Drach A, Erdemir A, Horner M, Mulugeta L, Ku J, **Rego B,** Khalighi A, Garlid A, Bui A, Gee M, Schwaber J, Newton A, Gupta S. “An evaluation tool to provide guidance for establishing consistent, credible modeling and simulation practices in neurobiology.” Journal of Computational Neuroscience. 2024 Oct 01;52:S28.
3. Castillero E, Howsmon DP, **Rego BV,** Xue Y, Gorman RC, Sacks M, Levy R, Ferrari G. “Ischemic mitral regurgitation is associated with impaired transforming growth factor/bone morphogenic protein signaling and increased CD45+ cell presence in the mitral valve interstitial cell population.” Circulation. 2020 Nov 12;142(sup3):A15013.
4. Narang H, **Rego B,** Khalighi A, Aly A, Pouch A, Gorman R, Gorman JH, Sacks M. “Patient-specific analysis of pre-surgical leaflet deformations to predict outcomes of surgical repair for ischemic mitral regurgitation.” Circulation. 2020 Nov 12;142(sup3):A17158.
5. Sacks M, **Rego B,** Howsmon D, Wells S. “What is the remodeling potential of the native heart valve?” Structural Heart. 2020 Feb 13;4(sup1):45.
6. Castillero E, Howsmon DP, **Rego BV,** Xue Y, Gorman RC, Sacks MS, Levy RJ, Ferrari G. “Transforming growth factor-β pathway gene expression changes in an ovine model of ischemic mitral regurgitation.” Circulation. 2019 Nov 11;140(sup1):A13800.

CONFERENCE PRESENTATIONS

Annotations: [c] = corresponding author, [g] = graduate research assistant, [u] = undergraduate research assistant

1. Martin R,[g] **Rego B.[c]** “Joint Modeling of Readmission and Post-Discharge Mortality After Surgical and Transcatheter Aortic Valve Replacement” [Poster]. American Heart Association (AHA) Scientific Sessions. Chicago, Illinois, November 6-9, 2026.

2. Naghshnejad P,[g] Kumar R, Romagnoli JA, **Rego BV.[c]** "A Computational Framework for the Design of Next-Generation Hemodialysis Membrane Polymers" [Poster]. American Institute of Chemical Engineers (AIChE) Annual Meeting. Minneapolis, Minnesota, November 8-12, 2026.
3. Martin R,[g] **Rego B.[c]** "Forecasting Long-Term Surgical Readmissions and Costs for Capacity and Payment Planning" [Podium Presentation]. Institute for Operations Research and the Management Sciences (INFORMS) Healthcare Conference. Raleigh, North Carolina, July 28-30, 2026.
4. Martin R,[g] **Rego B.[c]** "Cardiovascular Scaling Between Humans and Mice During Postnatal Development" [Poster]. Biomedical Engineering Society (BMES) Annual Meeting. San Diego, California, October 8-11, 2025.
5. Sartin V,[u] Caffery M,[u] Phillips A,[u] Zylicz A,[u] **Rego B.[c]** "VasoTracker Biax: Democratizing Vascular Biomechanics with a Low-Cost, Open-Source Biaxial Testing System" [Poster]. Biomedical Engineering Society (BMES) Annual Meeting. San Diego, California, October 8-11, 2025.
6. Caffery M,[u] Sartin V,[u] Phillips A,[u] McAllister H,[u] **Rego B.[c]** "A Cost-Effective Biaxial Mechanical Testing System for Vascular Specimens" [Podium Presentation]. National Conference on Undergraduate Research (NCUR). Pittsburgh, Pennsylvania, April 7-9, 2025.
7. Sartin V,[u] Caffery M,[u] Phillips A,[u] McAllister H,[u] Ricks-Boyd AC,[u] **Rego B.[c]** "A Cost-Effective Biaxial Mechanical Testing System for Vascular Specimens" [Podium Presentation]. 40th Annual Southern Biomedical Engineering Conference (SBEC). Shreveport, Louisiana, September 13-15, 2024.
8. Manchel A, Lytton WW, Myers JG, Erdemir A, Horner M, **Rego BV,** Mulugeta L, Ku JP, Vadigepalli R. "A Rubric for Assessing Conformance to the Ten Rules for Credible Practice of Modeling and Simulation in Healthcare" [Podium Presentation]. Virtual Physiological Human (VPH) Conference. Stuttgart, Germany, September 4-6, 2024.
9. Manchel A, Jung J, Myers J, Lytton W, Drach A, Erdemir A, Mulugeta L, Horner M, Ku J, **Rego B,** Khalighi A, Garlid A, Bui A, Vadigepalli R. "An Evaluation Tool to Provide Guidance for Establishing Consistent, Credible Modeling and Simulation Practices in Neurobiology" [Poster]. 32nd Annual Computational Neuroscience (CNS) Meeting. Leipzig, Germany, July 15-19, 2023.
10. **Rego BV,** Murtada SI, Li G, Tellides G, Humphrey JD. "Toward a Biomechanical Model of Aortic Development" [Podium Presentation]. Summer Biomechanics, Bioengineering and Biotransport Conference (SB^3C). Vail, Colorado, June 4-8, 2023.
11. Weiss D, **Rego B,** Cavinato C, Li D, Humphrey J. "Compensatory Aortic Remodeling in Marfan Syndrome Protects Against Sexually Dimorphic Rupture During a BAPN Challenge" [Podium Presentation]. Biomedical Engineering Society (BMES) Annual Meeting. San Antonio, Texas, October 12-15, 2022.
12. Humphrey J, Irons L, Murtada S, Ramachandra A, **Rego B.** "Homeostasis and the Developing Vasculature in Single Ventricle Physiology" [Podium Presentation]. Additional Ventures Single Ventricle Investigator Meeting. Baltimore, Maryland, October 6-9, 2022.
13. McGregor G, **Rego B,** Diller K. "Mathematical Injury for Combined Effects of Heat Transfer and Pressure in Causing Soft Tissue Injury" [Poster]. Summer Biomechanics, Bioengineering and Biotransport Conference (SB^3C). Cambridge, Maryland, June 20-23, 2022.
14. Yin M, Ban E, Zhang E, **Rego BV,** Humphrey JD, Karniadakis GE. "Data-driven Modeling of Injection-caused Delamination on Aortic Walls using DeepONet" [Podium Presentation]. International Mechanical Engineering Congress & Exposition (IMECE). Virtual Conference, November 1-4, 2021.
15. **Rego BV**, Sacks MS. "Predictive Computational Simulation of Mitral Valve Plasticity Induced by Myocardial Infarction" [Poster]. Biomedical Engineering Society (BMES) Annual Meeting. Orlando, Florida, October 6-9, 2021.
16. Lovoulos SL,[u] **Rego BV**, Li G, Humphrey JD, Tellides G. "Automatic Quantification of Lamellar and Interlamellar Elastin Content in Histological Images" [Podium Presentation]. Biomedical Engineering Society (BMES) Annual Meeting. Orlando, Florida, October 6-9, 2021.

17. Narang H, **Rego BV,** Gorman RC, Gorman JH, Sacks MS. "Patient-Specific Prediction of IMR Recurrence After Mitral Valve Surgical Repair" [Podium Presentation]. Summer Biomechanics, Bioengineering and Biotransport Conference (SB^3C). Virtual Conference, June 14-18, 2021.
18. Narang H, **Rego BV,** Khalighi AH, Gorman RC, Gorman JH, Sacks MS. "Predicting Mitral Valve Repair Outcomes Using a Patient-Specific Image-Based Modeling Pipeline" [Podium Presentation]. 14th World Congress in Computational Mechanics (WCCM). Virtual Conference, January 11-15, 2021.
19. Narang H, **Rego BV,** Khalighi AH, Aly A, Pouch AM, Gorman RC, Gorman JH, Sacks MS. "Patient-Specific Analysis of Pre-Surgical Leaflet Deformations to Predict Outcomes of Surgical Repair for Ischemic Mitral Regurgitation" [Poster]. American Heart Association (AHA) Scientific Sessions. Virtual Conference, November 14-16, 2020.
20. Castillero E, Howsmon DP, **Rego BV,** Xue Y, Gorman RC, Sacks MS, Levy RJ, Ferrari G. "Ischemic Mitral Regurgitation is Associated with Impaired Transforming Growth Factor/Bone Morphogenic Protein Signaling and Increased CD45+ Cell Presence in the Mitral Valve Interstitial Cell Population" [Poster]. American Heart Association (AHA) Scientific Sessions. Virtual Conference, November 14-16, 2020.
21. Narang H, **Rego BV,** Khalighi AH, Gorman RC, Gorman JH, Sacks MS. "Patient-Specific In-Vivo Estimation of Ischemic Mitral Valve Deformation as a Predictor of Repair Failure" [Podium Presentation]. Biomedical Engineering Society (BMES) Annual Meeting. Virtual Conference, October 14-17, 2020.
22. Howsmon DP, **Rego BV,** Castillero E, Ayoub S, Khalighi AH, Gorman RC, Gorman JH, Ferrari G, Sacks MS. "Cellular Mechanisms of Mitral Valve Remodeling After Myocardial Infarction" [Poster]. Biomedical Engineering Society (BMES) Annual Meeting. Virtual Conference, October 14-17, 2020.
23. Sacks MS, **Rego BV.** "Adaptive Plasticity in the Mitral Valve" [Poster]. Society of Engineering Science (SES) 57th Annual Technical Meeting. Virtual Conference, September 29-October 1, 2020.
24. **Rego BV,** Khalighi AH, Gorman RC, Gorman JH, Sacks MS. "A First Computational Model of Mitral Valve Plasticity" [Podium Presentation]. Summer Biomechanics, Bioengineering and Biotransport Conference (SB^3C). Virtual Conference, June 17-20, 2020.
25. Narang H, **Rego BV,** Khalighi AH, Gorman RC, Gorman JH, Sacks MS. "Patient-Specific In-Silico Predictions of Mitral Valve Repair Success" [Podium Presentation]. Summer Biomechanics, Bioengineering and Biotransport Conference (SB^3C). Virtual Conference, June 17-20, 2020.
26. Howsmon DP, **Rego BV,** Castillero E, Ayoub S, Khalighi AH, Gorman RC, Gorman JH, Ferrari G, Sacks MS. "Mitral Valve Leaflet Response to Myocardial Infarction: From Gene Expression to Tissue Remodeling" [Podium Presentation]. Summer Biomechanics, Bioengineering and Biotransport Conference (SB^3C). Virtual Conference, June 17-20, 2020.
27. Sacks MS, **Rego BV,** Howsmon DP, Wells SM. "What is the Remodeling Potential of the Native Heart Valve?" [Podium Presentation]. Heart Valve Society (HVS) International Conference of Tissue-Engineered Heart Valves (ICTEHV). Abu Dhabi, United Arab Emirates, February 14, 2020.
28. Castillero E, Howsmon DP, **Rego BV,** Xue Y, Gorman RC, Sacks MS, Levy RJ, Ferrari G. "Transforming Growth Factor-β Pathway Gene Expression Changes in an Ovine Model of Ischemic Mitral Regurgitation" [Poster]. American Heart Association (AHA) Scientific Sessions. Philadelphia, Pennsylvania, November 16-18, 2019.
29. Howsmon DP, **Rego BV,** Castillero E, Ayoub S, Khalighi AH, Gorman RC, Gorman JH, Ferrari G, Sacks MS. "Mitral Valve Remodeling and Mechanotransduction in Ischemic Mitral Regurgitation: A Multi-Scale Investigation" [Poster]. North American Vascular Biology Organization (NAVBO) Annual Meeting. Pacific Grove, California, October 27-31, 2019.
30. **Rego BV,** Howsmon DP, Ayoub S, Khalighi AH, Castillero E, Ferrari G, Gorman RC, Gorman JH, Sacks MS. "Mitral Valve Remodeling After Myocardial Infarction: Tissue and Cellular Adaptation to Altered Stresses" [Podium Presentation]. Biomedical Engineering Society (BMES) Annual Meeting. Philadelphia, Pennsylvania, October 16-19, 2019.
31. **Rego BV,** Potter ST, Pouch AM, Gorman RC, Sacks MS. "Image-Based Estimation of Valve Leaflet Deformations in Patients with Normal and Bicuspid Aortic Valves" [Poster]. Biomedical Engineering Society (BMES) Annual Meeting. Philadelphia, Pennsylvania, October 16-19, 2019.

32. Narang H, Khalighi AH, **Rego BV,** Gorman RC, Gorman JH, Sacks MS. “Image-Based Simulation of Mitral Valve Repair Surgery for Predicting Patient-Specific Outcomes” [Podium Presentation]. Biomedical Engineering Society (BMES) Annual Meeting. Philadelphia, Pennsylvania, October 16-19, 2019.
33. **Rego BV,** Potter ST, Pouch AM, Gorman RC, Sacks MS. “Determination of Patient-Specific Aortic Valve Leaflet Strains from In-Vivo Images” [Podium Presentation]. 16th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering (CMBBE). New York, New York, August 14-16, 2019.
34. Narang H, Khalighi AH, **Rego BV,** Gorman RC, Sacks MS. “An Image-Based Modeling Pipeline for Predicting Patient-Specific Mitral Valve Repair Outcomes” [Podium Presentation]. 16th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering (CMBBE). New York, New York, August 14-16, 2019.
35. **Rego BV,** Khalighi AH, Lai EK, Gorman RC, Gorman JH, Sacks MS. “Computational Assessment of Mitral Valve Remodeling Using In-Vivo Imaging Data” [Podium Presentation]. 15th U.S. National Congress on Computational Mechanics (USNCCM). Austin, Texas, July 28-August 1, 2019.
36. **Rego BV,** Potter ST, Pouch AM, Gorman RC, Sacks MS. “Non-invasive Quantification of In-Vivo Aortic Valve Strains” [Podium Presentation]. 15th U.S. National Congress on Computational Mechanics (USNCCM). Austin, Texas, July 28-August 1, 2019.
37. **Rego BV,** Khalighi AH, Lai EK, Gorman RC, Gorman JH, Sacks MS. “Mitral Valve Leaflet Remodeling Following Myocardial Infarction” [Poster]. Summer Biomechanics, Bioengineering and Biotransport Conference (SB^3C). Seven Springs, Pennsylvania, June 25-28, 2019.
38. **Rego BV,** Potter ST, Pouch AM, Gorman RC, Sacks MS. “A Non-invasive Method to Quantify Aortic Valve Leaflet Deformation” [Poster]. Summer Biomechanics, Bioengineering and Biotransport Conference (SB^3C). Seven Springs, Pennsylvania, June 25-28, 2019.
39. Khalighi AH, **Rego BV,** Gorman RC, Gorman JH, Sacks MS. “Image-Based Simulation of the Mitral Valve Repair Surgery in Ischemic Mitral Regurgitation Patients” [Poster]. Summer Biomechanics, Bioengineering and Biotransport Conference (SB^3C). Seven Springs, Pennsylvania, June 25-28, 2019.
40. Khalighi AH, **Rego BV,** Gorman RC, Gorman JH, Sacks MS. “Patient-Specific Predictions of Mitral Valve Closure Following Annuloplasty Repair Surgery” [Poster]. Biomedical Engineering Society (BMES)/US Food and Drug Administration (FDA) Frontiers in Medical Devices Conference. College Park, Maryland, March 19-21, 2019.
41. Potter ST, **Rego BV,** Pouch AM, Gorman RC, Sacks MS. “In-Vivo Patient-Specific Deformation of the Normal and Bicuspid Heart Valve” [Poster]. Biomedical Engineering Society (BMES)/US Food and Drug Administration (FDA) Frontiers in Medical Devices Conference. College Park, Maryland, March 19-21, 2019.
42. **Rego BV,** Khalighi AH, Gorman RC, Gorman JH, Sacks MS. “Assessment of the Mitral Valve After Infarction Through Clinical Imaging” [Podium Presentation]. Biomedical Engineering Society (BMES) Annual Meeting. Atlanta, Georgia, October 17-20, 2018.
43. Khalighi AH, **Rego BV,** Drach A, Gorman RC, Gorman JH, Sacks MS. “Patient-Specific Image-Based Prediction of Mitral Valve Function After Annuloplasty Surgery” [Poster]. Biomedical Engineering Society (BMES) Annual Meeting. Atlanta, Georgia, October 17-20, 2018.
44. **Rego BV,** Ayoub S, Khalighi AH, Gorman RC, Gorman JH, Sacks MS. “Effects of Ischemic Regurgitation on Mitral Valve Mechanics and Structure” [Podium Presentation]. 8th World Congress of Biomechanics. Dublin, Ireland, July 8-12, 2018.
45. **Rego BV,** Khalighi AH, Drach A, Lai EK, Pouch AM, Gorman RC, Gorman JH, Sacks MS. “A Non-invasive Method for the Determination of In-Vivo Mitral Valve Leaflet Strains” [Poster]. 8th World Congress of Biomechanics. Dublin, Ireland, July 8-12, 2018.
46. Khalighi AH, **Rego BV,** Drach A, Gorman RC, Gorman JH, Sacks MS. “Development of a Mechanically Equivalent Mitral Sub-valvular Apparatus” [Podium Presentation]. 8th World Congress of Biomechanics. Dublin, Ireland, July 8-12, 2018.

47. **Rego BV,** Ayoub S, Khalighi AH, Gorman RC, Gorman JH, Sacks MS. “Mitral Valve Remodeling During Ischemic Regurgitation: Implications for Restoring Tissue Homeostasis Through Surgical Repair” [Poster]. The Heart Valve Society (HVS) 4th Annual Meeting. New York, New York, April 12-14, 2018.
48. **Rego BV,** Khalighi AH, Gorman RC, Gorman JH, Sacks MS. “Quantifying Infarction-induced Changes in Mitral Valve Geometry and Deformation Using 3D Echocardiography” [Podium Presentation]. The Heart Valve Society (HVS) 4th Annual Meeting. New York, New York, April 12-14, 2018.
49. Khalighi AH, **Rego BV,** Drach A, Gorman RC, Gorman JH, Sacks MS. “Patient-Specific Optimization of Mitral Valve Annuloplasty Surgery” [Podium Presentation]. The Heart Valve Society (HVS) 4th Annual Meeting. New York, New York, April 12-14, 2018.
50. Khalighi AH, **Rego BV,** Drach A, Gorman RC, Gorman JH, Sacks MS. “Mechanically Equivalent Mitral Valve Sub-Valvular Apparatus” [Poster]. The Heart Valve Society (HVS) 4th Annual Meeting. New York, New York, April 12-14, 2018.
51. **Rego BV,** Khalighi AH, Drach A, Gorman JH, Gorman RC, Sacks MS. “A Non-invasive Method to Estimate *In Vivo* Strains of the Mitral Valve” [Podium Presentation]. Biomedical Engineering Society (BMES) Annual Meeting. Phoenix, Arizona, October 11-14, 2017.
52. Khalighi AH, **Rego BV,** Drach A, Gorman RC, Gorman JH, Sacks MS. “Mitral Valve Chordae Tendineae: Functional Characterization” [Poster]. Biomedical Engineering Society (BMES) Annual Meeting. Phoenix, Arizona, October 11-14, 2017.
53. Lu M,[u] Ravi N,[u] Kim J,[u] **Rego BV,** Ayoub S, Sacks MS. “Mechanical and Histological Characterization of Regurgitant Mitral Valve Anterior Leaflets” [Poster]. Biomedical Engineering Society (BMES) Annual Meeting. Phoenix, Arizona, October 11-14, 2017.
54. **Rego BV,** Khalighi AH, Drach A, Gorman JH, Gorman RC, Sacks MS. “Image-Based Estimation of Mitral Valve Strains in the Beating Heart” [Podium Presentation]. 14th U.S. National Congress on Computational Mechanics (USNCCM). Montreal, Quebec, Canada, July 17-20, 2017.
55. **Rego BV,** Ayoub S, Khalighi AH, Drach A, Gorman JH, Gorman RC, Sacks MS. “Alterations in Mechanical Properties and *In Vivo* Geometry of the Mitral Valve Following Myocardial Infarction” [Podium Presentation]. Summer Biomechanics, Bioengineering and Biotransport Conference (SB^3C). Tucson, Arizona, June 21-24, 2017.
56. **Rego BV,** Khalighi AH, Drach A, Gorman JH, Gorman RC, Sacks MS. “An Inverse Modeling Approach to Estimate In-Vivo Strains in the Healthy and Diseased Mitral Valve” [Podium Presentation]. Engineering Mechanics Institute (EMI) Conference. San Diego, California, June 4-7, 2017.
57. **Rego BV,** Ayoub S, Khalighi AH, Drach A, Gorman JH, Gorman RC, Sacks MS. “Alterations in Mechanical Properties and *In Vivo* Geometry of the Mitral Valve Following Myocardial Infarction” [Podium Presentation]. The Heart Valve Society (HVS) 3rd Annual Meeting. Monte Carlo, Monaco, March 2-4, 2017.
58. **Rego BV,** Sacks MS. “A Functionally Graded Material Model for the Transmural Stress Distribution of the Aortic Valve Leaflet” [Podium Presentation]. Society of Engineering Science (SES) 53rd Annual Technical Meeting. College Park, Maryland, October 2-5, 2016.
59. **Rego BV,** Wells SM, Lee CH, Sacks MS. “Evidence for Interstitial Cell-Driven Restoration of Homeostasis in Heart Valve Remodeling” [Poster]. 15th Biennial Meeting of the International Society for Applied Cardiovascular Biology (ISACB). Banff, Alberta, Canada, September 7-10, 2016.
60. **Rego BV,** Wells SM, Sacks MS. “Mitral Valve Leaflet Remodeling During Pregnancy: Implications for Modeling Valvular Adaptation” [Poster]. Summer Biomechanics, Bioengineering and Biotransport Conference (SB^3C). National Harbor, Maryland, June 29-July 2, 2016.
61. **Rego BV,** Sacks MS. “A 3D Constitutive Model for the Aortic Valve Leaflet” [Podium Presentation]. Society of Engineering Science (SES) 52nd Annual Technical Meeting. College Station, Texas, October 26-28, 2015.
62. **Rego BV,** Wells SM, Sacks MS. “Heart Valve Growth and Remodeling in Pregnancy” [Poster]. Biomedical Engineering Society (BMES) Annual Meeting. Tampa, Florida, October 7-10, 2015.

63. **Rego BV,** Sacks MS. “True 3D Stresses in Heart Valve Leaflets” [Podium Presentation]. Summer Biomechanics, Bioengineering and Biotransport Conference (SB^3C). Snowbird, Utah, June 17-20, 2015.