Stanford

Alison Marsden

Douglass M. and Nola Leishman Professor of Cardiovascular Diseases, Professor of Pediatrics (Cardiology) and of Bioengineering and, by courtesy, of Mechanical Engineering

Pediatrics - Cardiology

Curriculum Vitae available Online

Bio

BIO

Alison Marsden is the Douglass M. and Nola Leishman Professor of cardiovascular disease in the departments of Pediatrics, Bioengineering, and, by courtesy, Mechanical Engineering at Stanford University. From 2007-2015 she was a faculty member in the Mechanical and Aerospace Engineering Department at the University of California San Diego. She graduated with a bachelor's degree in Mechanical Engineering from Princeton University in 1998, and a PhD in Mechanical Engineering from Stanford in 2005 working with Prof. Parviz Moin. She was a postdoctoral fellow at Stanford University in Bioengineering and Pediatric Cardiology from 2005-07 working with Charles Taylor and Jeffrey Feinstein. She was the recipient of a Burroughs Wellcome Fund Career Award at the Scientific Interface in 2007, an NSF CAREER award in 2011. She is a fellow of the American Institute of Medical and Biological Engineers, the Society for Industrial and Applied Mathematics, the American Physical Society, the Biomedical Engineering Society, and the American Society of Mechanical Engineers. She received the UCSD graduate student association faculty mentor award in 2014 and MAE department teaching award at UCSD in 2015 and the Van C. Mow Medal from the ASME in 2023, and the department of Pediatrics Postdoc Mentoring Award in 2025. She has published over 200 peer reviewed journal papers, and has active funding from the NSF, NIH, and several private foundations. She serves on editorial boards of leading journals in biomechanics and computational science. Her work focuses on the development of numerical methods for cardiovascular blood flow simulation, medical device design, application of optimization to large-scale fluid mechanics simulations, and application of engineering tools to impact patient care in cardiovascular surgery and congenital heart disease.

ACADEMIC APPOINTMENTS

- Professor, Pediatrics - Cardiology
- Professor, Bioengineering
- Professor (By courtesy), Mechanical Engineering
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Wu Tsai Human Performance Alliance
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Institute for Computational and Mathematical Engineering (ICME)

ADMINISTRATIVE APPOINTMENTS

- Co-Director, NIH T32 CHIP (Computational medicine in the Heart: Integrated Program), Stanford University, (2023-2028)

HONORS AND AWARDS

- Van C. Mow Medal, American Society of Mechanical Engineers (2023)
- Open Science Champion Award, Stanford Center for Open and Reproducible Science (CoRES) (2022)
- Fellow, Biomedical Engineering Society (2021)
- Fellow, American Physical Society Division of Fluid Dynamics (2020)
- Fellow, Society for Industrial and Applied Mathematics (2018)
- Fellow, American Institute of Medical and Biological Engineers (2018)
- Vera Moulton Wall Center, Faculty Scholar (2016)
- Teacher of the year, MAE department, UCSD (2015)
- Graduate student association faculty mentor award, University of California San Diego (2014)
- CAREER Award, National Science Foundation (2012)
- Career Award at the Scientific Interface, Burroughs Wellcome Fund (2007)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Section Editor, PLOS Computational Biology (2024 - present)
- Associate Editor, Scientific Reports (2021 - present)
- Advisory Board, Burroughs Wellcome Fund CASI Program (2016 - present)
- Associate Editor, Journal of Biomechanical Engineering (2014 - present)
- Section Editor, Current Opinion in Biomedical Engineering (2016 - present)

PROFESSIONAL EDUCATION

- BSE, Princeton University , Mechanical Engineering (1998)
- MSE, Stanford University , Mechanical Engineering (2000)
- PhD, Stanford University , Mechanical Engineering (2005)

LINKS

- Cardiovascular Biomechanics Computation Lab: https://cbcl.stanford.edu/
- SimVascular Open Source Software Project: http://www.simvascular.org/
- LinkedIn: https://www.linkedin.com/in/alison-marsden-8302bb36/

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

The Cardiovascular Biomechanics Computation Lab at Stanford develops novel computational methods for the study of cardiovascular disease progression, surgical methods, and medical devices. We have a particular interest in pediatric cardiology, and use virtual surgery to design novel surgical concepts for children born with heart defects.

Teaching

COURSES

2026-27

- Biomechanical Research Symposium: ME 389 (Spr)
- Computational Modeling in the Cardiovascular System: BIOE 285, CME 285, ME 285 (Aut)

2025-26

- Mathematical Modeling of Biological Systems: BIOE 209, CME 209 (Aut)

2024-25

- Biomechanical Research Symposium: ME 389 (Spr)
- Computational Modeling in the Cardiovascular System: BIOE 285, CME 285, ME 285 (Aut)

2023-24

- Biomechanical Research Symposium: ME 389 (Spr)
- Introduction to Numerical Methods for Engineering: CME 206, ME 300C (Spr)
- Mathematical Modeling of Biological Systems: BIOE 209, CME 209 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Sydney Covitz, Riley Juenemann, Alex Leffell, Federico Rios Tascon, Soham Sinha, Xitong Wang

Orals Chair

Andy Wu

Postdoctoral Faculty Sponsor

Karoline Marie Bornemann, Sujal Dave, Javiera Jilberto Vallejos, Bahetihazi Maidu, Marisa Schmidt Bazzi, Guoxiang Tong

Doctoral Dissertation Advisor (AC)

Gema Cabero Vidal, Chloe Choi, Nicholas Dorn, Zinan Hu, Bryan Hwang, Kb Ko, Elena Martinez, Michael Megally, Lazaros Papamanolis, Natalia Rubio, Devin Seyler, Sascha Stocker

Doctoral Dissertation Co-Advisor (AC)

Jeff Li, XinYi Liang

Doctoral (Program)

Divya Adil, Rocky An, Elizabeth Brown, Huixin Huang, Shae Mclaughlin, Aditi Merchant, Bryan Wong

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Bioengineering (PhD Program)
- Pediatric Cardiology (Fellowship Program)

Publications

PUBLICATIONS

- **MRI-Based Pressure Gradient Mapping in Patient-Specific Models of Coarctation of the Aorta.** *medRxiv : the preprint server for health sciences*
  Nair, P. J., Ferrari, L., Loecher, M., McGrath, C., Castillo Passi, C. A., Marsden, A. L., Ennis, D. B.
  2026

- **Impact of guideline definitions on right ventricular diameter in echocardiography: an automated analysis in controls and patients with pulmonary hypertension.** *Echo research and practice*
  Hermansson, F. N., Celestin, B. E., Bagherzadeh, S. P., Fahed, G., Santana, E. J., Mantri, N., Zamanian, R. T., Marsden, A. L., Dual, S. A., Salerno, M., Haddad, F.
  2026; 13 (1)

- **Per-vessel myocardial blood flow improvement after coronary artery bypass graft surgery quantified by CT myocardial perfusion imaging.** *Journal of cardiovascular computed tomography*

Seresti, A., Castillo, E., Fahmy, S., Menon, K., Ahmed, A. H., Aung, P. P., Malik, S. B., Nguyen, P. K., Boyd, J., Marsden, A. L., Khan, M. O., Nieman, K.
2026

- **The importance of Post-Processing Methods for Assessing Right Ventricular Volumes and Function in Patients with Pulmonary Hypertension: results from the PRINCEPT study.** *Chest*
  Azarine, A., Kasani, K., Kim, Y. W., Sakhi, H., Amsallem, M., Aubrege, L., Chevance, V., Hauguel, A., Humbert, M., Savale, L., Jais, X., Montani, D., Marsden, et al
  2026
- **A Continuum of Atrial Peristalsis Initiates the Bicuspid to Quadricuspid Valve Transition.** *bioRxiv : the preprint server for biology*
  Wang, J., Brown, A. L., Zhao, P., Zheng, C. Z., Chen, J. N., Zhou, B., Liu, J., Yokota, T., Kaiser, A. D., Park, S. K., Marsden, A. L., Hsiai, T. K.
  2026
- **Simulations Predict Improved Valve Performance Without Direct Leaflet Intervention After Neonatal Truncus Arteriosus Repair.** *The Journal of thoracic and cardiovascular surgery*
  Bornemann, K. M., Choi, P. S., Huber, J., Reed, A. K., Sharir, A., Maskatia, S. A., Marsden, A. L., Ma, M. R., Kaiser, A. D.
  2026
- **Fontan conduit cross-sectional area and relationship to exercise performance.** *Journal of cardiovascular magnetic resonance : official journal of the Society for Cardiovascular Magnetic Resonance*
  O'Halloran, C. P., Alsaied, T., Wang, A. P., Ward, K., Laternser, C., Files, M. D., Mines, E., Lemley, B. A., Husain, N., Desai, L., Rathod, R. H., Robinson, J. D.
  2026; 28 (1): 102729
- **Cardiac Mechanics Modeling: Recent Developments and Current Challenges** *JOURNAL OF ELASTICITY*
  Brown, A. L., Liu, J., Ennis, D. B., Marsden, A. L.
  2026; 158 (2)
- **In silico approaches to tackle coronary artery disease: where we are, where we are going.** *Computer methods and programs in biomedicine*
  De Nisco, G., Lodi Rizzini, M., Veneziani, A., Marsden, A. L.
  2026; 280: 109340
- **Deep learning for vessel segmentation and flow analysis to identify clusters associated with adverse outcomes in a fontan patient registry** *SCIENTIFIC REPORTS*
  Yao, T., Clair, N., Gong, M., Miller, G. F., Quail, M., Moledina, S., Dorfman, A. L., Fogel, M. A., Krishnamurthy, R., Lam, C. Z., Robinson, J. D., Slesnick, T. C., Weigand, et al
  2026; 16 (1)
- **Deep reinforcement learning for automatic anatomic CT landmark localization in Stanford Type B aortic dissection.** *Radiology advances*
  Bäumler, K., Codari, M., Mastrodicasa, D., Mistelbauer, G., Willemink, M. J., Walters, S., Hinostroza, V., Turner, V., Chepelev, L., Sriprachyakul, A., Madani, M. H., Ewane, A., Chen, et al
  2026; 3 (2): umag006
- **Patient-Specific Computational Flow Simulation Reveals Adverse Hemodynamic Factors Associated With Occlusion of Directional Branches After Fenestrated-Branched Endovascular Aneurysm Repair.** *Journal of the American Heart Association*
  Tran, K., Chait, J., Tenorio, E., Yang, W., Marsden, A., Mendes, B., Lee, J. T., Oderich, G. S.
  2026: e044790
- **Optimized biomechanical design of a tissue engineered pulsatile Fontan conduit.** *NPJ Regenerative medicine*
  Emuna, N., Hu, Z., Marsden, A. L., Humphrey, J. D.
  2026
- **Full-field surrogate modeling of cardiac electrophysiology encoding geometric variability.** *Computer methods in applied mechanics and engineering*
  Martinez, E. S., Moscoloni, B., Salvador, M., Kong, F., Peirlinck, M., Marsden, A. L.
  2026; 448 (Pt A)
- **EXPLORATION OF TIMING AND SPEED CONTROL FOR EXPANSION-BASED PUMPING TO REDUCE INFERIOR VENA CAVA PRESSURE IN FONTAN PHYSIOLOGY**
  Liang, X., Conover, T., Hu, Z., Figliola, R., Cutkosky, M., Marsden, A., ASME

AMER SOC MECHANICAL ENGINEERS.2026

- **Full-field surrogate modeling of cardiac electrophysiology encoding geometric variability** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Martinez, E., Moscoloni, B., Salvador, M., Kong, F., Peirlinck, M., Marsden, A.
  2026; 448
- **Data-driven bifurcation handling in physics-based reduced-order vascular hemodynamic models.** *Computer methods and programs in biomedicine*
  Rubio, N. L., Darve, E. F., Marsden, A. L.
  2025; 276: 109230
- **On the performance of multi-fidelity and reduced-dimensional neural emulators for inference of physiological boundary conditions.** *Computers in biology and medicine*
  Choi, C. H., Zanoni, A., Schiavazzi, D. E., Marsden, A. L.
  2025; 200: 111389
- **Personalized biventricular mechanics and sensitivity to model morphology.** *bioRxiv : the preprint server for biology*
  Brown, A. L., Shi, L., Salvador, M., Kong, F., Ennis, D. B., Chen, I., Vedula, V., Marsden, A. L.
  2025
- **Deformable registration and generative modelling of aortic anatomies by auto-decoders and neural ODEs.** *npj biological physics and mechanics*
  Tenderini, R., Pegolotti, L., Kong, F., Pagani, S., Regazzoni, F., Marsden, A. L., Deparis, S.
  2025; 2 (1): 26
- **Liquid Fourier Latent Dynamics Networks for fast GPU-based numerical simulations in computational cardiology.** *Computers in biology and medicine*
  Salvador, M., Marsden, A. L.
  2025; 200: 111355
- **Simulation-guided design of leaflet height in bicuspidization of the aortic valve.** *JTCVS open*
  Kaiser, A. D., Choi, P. S., Sharir, A., Marsden, A. L., Ma, M. R.
  2025; 28: 434-443
- **Replicating The Cell Population of the Developing Human Heart for Cardiac Grafts**
  Rutsche, D., Sexton, Z., Herrmann, J., Hudson, A., Sinha, S., Shiwarski, D., Masaltseva, A., Solberg, F., Szafron, J., Pham, J., Wu, S., Feinberg, A., Scott, et al
  MARY ANN LIEBERT, INC.2025
- **Simulation-guided design of leaflet height in bicuspidization of the aortic valve** *JTCVS OPEN*
  Kaiser, A. D., Choi, P. S., Sharir, A., Marsden, A. L., Ma, M. R.
  2025; 28: 434-443
- **Neural Active Manifolds: Nonlinear Dimensionality Reduction for Uncertainty Quantification.** *Journal of scientific computing*
  Zanoni, A., Geraci, G., Salvador, M., Marsden, A. L., Schiavazzi, D. E.
  2025; 105 (3): 79
- **Mechanically activated snai1b coordinates the initiation of myocardial delamination for trabeculation.** *Nature communications*
  Wang, J., Brown, A. L., Park, S. K., Zheng, C. Z., Langenbacher, A., Zhu, E., O'Donnell, R., Zhao, P., Hsu, J. J., Yokota, T., Liu, J., Chen, J. N., Marsden, et al
  2025; 16 (1): 8363
- **Cardiac mechanics modeling: recent developments and current challenges.** *ArXiv*
  Brown, A. L., Liu, J., Ennis, D. B., Marsden, A. L.
  2025
- **Cardiac mechanics modeling: recent developments and current challenges.** *ArXiv*
  Brown, A. L., Liu, J., Ennis, D. B., Marsden, A. L.
  2025

- **Personalized and uncertainty-aware coronary hemodynamics simulations: From Bayesian estimation to improved multi-fidelity uncertainty quantification.** *Computer methods and programs in biomedicine*
  Menon, K., Zanoni, A., Khan, M. O., Geraci, G., Nieman, K., Schiavazzi, D. E., Marsden, A. L.
  2025; 271: 108951
- **Rapid model-guided design of organ-scale synthetic vasculature for biomanufacturing.** *Science (New York, N.Y.)*
  Sexton, Z. A., Rütsche, D., Herrmann, J. E., Hudson, A. R., Sinha, S., Du, J., Shiwarski, D. J., Masaltseva, A., Solberg, F. S., Pham, J., Szafron, J. M., Wu, S. M., Feinberg, et al
  2025; 388 (6752): 1198-1204
- **A fluid-structure interaction model of the zebrafish aortic valve.** *Journal of biomechanics*
  Kaiser, A. D., Wang, J., Brown, A. L., Zhu, E., Hsiai, T., Marsden, A. L.
  2025; 190: 112794
- **Computational Hemodynamic Performance Analysis of an Off-the-shelf Multi-branched Endoprosthesis for Repair of Thoracoabdominal Aortic Aneurysms**
  Farah, E., Marsden, A., Lee, J., Tran, K.
  MOSBY-ELSEVIER.2025
- **svZeroDSolver: A modular package for lumped-parameter cardiovascular simulations.** *Journal of open source software*
  Menon, K., Richter, J., Pfaller, M. R., Pham, J., Mathew, E. M., Harold, K. E., Dorn, N. C., Verma, A., Marsden, A. L.
  2025; 10 (109)
- **Validation of CTA-based closed-loop coronary artery flow simulations against intravascular Doppler velocity and pressure measurements.** *Computer methods and programs in biomedicine*
  Seresti, A., Marsden, A. L., Kahn, A. M., Reeves, R. R., Mahmud, E., Khiami, B. A., Ang, L., Khan, M. O.
  2025; 268: 108868
- **Experiments and Simulations to Assess Exercise-Induced Pressure Drop Across Aortic Coarctations.** *Journal of biomechanical engineering*
  Nair, P. J., Perra, E., McElhinney, D. B., Marsden, A., Ennis, D. B., Dual, S.
  2025: 1-16
- **Constrained optimization of scaffold behavior for improving tissue engineered vascular grafts.** *Journal of biomechanics*
  Hsu, R. M., Szafron, J. M., Carvalho, C. C., Humphrey, J. D., Marsden, A. L.
  2025; 186: 112670
- **Multiphysics Simulations of a Bioprinted Pulsatile Fontan Conduit.** *Journal of biomechanical engineering*
  Hu, Z., Herrmann, J., Schwarz, E., Gerosa, F., Emuna, N., Humphrey, J., Feinberg, A. W., Hsia, T. Y., Skylar-Scott, M., Marsden, A.
  2025: 1-43
- **Oversized Conduits Predict Stenosis in Tissue Engineered Vascular Grafts.** *JACC. Basic to translational science*
  Blum, K. M., Turner, M. E., Schwarz, E. L., Best, C. A., Kelly, J. M., Yates, A. R., Hor, K. N., Matsuzaki, Y., Drews, J. D., Zakko, J., Shah, K., Shinoka, T., Humphrey, et al
  2025
- **Bayesian Windkessel calibration using optimized zero-dimensional surrogate models.** *Philosophical transactions. Series A, Mathematical, physical, and engineering sciences*
  Richter, J., Nitzler, J., Pegolotti, L., Menon, K., Biehler, J., Wall, W. A., Schiavazzi, D. E., Marsden, A. L., Pfaller, M. R.
  2025; 383 (2292): 20240223
- **A software benchmark for cardiac elastodynamics** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Arostica, R., Nolte, D., Brown, A., Gebauer, A., Karabelas, E., Jilberto, J., Salvador, M., Bucelli, M., Piersanti, R., Osouli, K., Augustin, C., Finsberg, H., Shi, et al
  2025; 435
- **Rapid Model-Guided Design of Organ-Scale Synthetic Vasculature for Biomanufacturing.** *Science*
  Sexton, Z. A., Rütsche, D., Herrmann, J. E., Hudson, A. R., Sinha, S., Du, J., Shiwarski, D. J., Masaltseva, A., Solberg, F. S., Pham, J., Szafron, J. M., Wu, S. M., Feinberg, et al
  2025; 388 (6752): 1198-1204

- **High Shear Stress Reduces ERG Causing Endothelial-Mesenchymal Transition and Pulmonary Arterial Hypertension.** *Arteriosclerosis, thrombosis, and vascular biology*
  Shinohara, T., Moonen, J. R., Chun, Y. H., Lee-Yow, Y. C., Okamura, K., Szafron, J. M., Kaplan, J., Cao, A., Wang, L., Guntur, D., Taylor, S., Isobe, S., Dong, et al
  2024
- **Assessing the Impact of Cardiac Output and Valve Orientation on Bioprosthetic Pulmonary Valve Hemodynamics Using In Vitro 4D-Flow MRI and High-Speed Imaging.** *Cardiovascular engineering and technology*
  Schiavone, N. K., Nair, P. J., Elkins, C. J., McElhinney, D. B., Ennis, D. B., Eaton, J. K., Marsden, A. L.
  2024
- **Combined simulation and ex vivo assessment of free-edge length in bicuspidization repair for congenital aortic valve disease.** *JTCVS open*
  Choi, P. S., Sharir, A., Ono, Y., Shibata, M., Kaiser, A. D., Palagani, Y., Marsden, A. L., Ma, M. R.
  2024; 22: 395-404
- **Hybrid physics-based and data-driven modeling of vascular bifurcation pressure differences.** *Computers in biology and medicine*
  Rubio, N. L., Pegolotti, L., Pfaller, M. R., Darve, E. F., Marsden, A. L.
  2024; 184: 109420
- **Patient-specific computational flow simulation reveals significant differences in paravisceral aortic hemodynamics between fenestrated and branched endovascular aneurysm repair.** *JVS-vascular science*
  Tran, K., Deslarzes-Dubuis, C., DeGlise, S., Kaladji, A., Yang, W., Marsden, A. L., Lee, J. T.
  2024; 5: 100183
- **FSGe: A fast and strongly-coupled 3D fluid-solid-growth interaction method** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Pfaller, M. R., Latorre, M., Schwarz, E. L., Gerosa, F. M., Szafron, J. M., Humphrey, J. D., Marsden, A. L.
  2024; 431
- **Characterization and Z-score Calculation of Cardiac MRI parameters in patients after the Fontan operation. A Fontan Outcome Registry using CMR Examinations (FORCE) study.** *Journal of cardiovascular magnetic resonance : official journal of the Society for Cardiovascular Magnetic Resonance*
  Alsaied, T., Li, R., Christopher, A., Fogel, M., Slesnick, T. C., Krishnamurthy, R., Muthurangu, V., Dorfman, A. L., Lam, C. Z., Weigand, J., Jeong, J. H., Robinson, J. D., Olivieri, et al
  2024: 101113
- **Assessment of aortic dissection remodeling with patient-specific fluid-structure interaction models.** *IEEE transactions on bio-medical engineering*
  Baumler, K., Rolf-Pissarczyk, M., Schussnig, R., Fries, T., Mistelbauer, G., Pfaller, M. R., Marsden, A. L., Fleischmann, D., Holzapfel, G. A.
  2024; PP
- **Investigation of a chronic single-stage sheep Fontan model.** *JTCVS open*
  Kelly, J. M., Hu, Z., Takaesu, F., Watanabe, T., Storrs, J., Blais, B., Yuhara, S., Morrison, A., Nelson, K., Ulziibayar, A., Heuer, E., Anderson, C., Jimenez, et al
  2024; 21: 268-278
- **Deforming Patient-Specific Models of Vascular Anatomies to Represent Stent Implantation via Extended Position Based Dynamics.** *Cardiovascular engineering and technology*
  Pham, J., Kong, F., James, D. L., Feinstein, J. A., Marsden, A. L.
  2024
- **Personalized and uncertainty-aware coronary hemodynamics simulations: From Bayesian estimation to improved multi-fidelity uncertainty quantification.** *ArXiv*
  Menon, K., Zanoni, A., Khan, O., Geraci, G., Nieman, K., Schiavazzi, D. E., Marsden, A. L.
  2024
- **Improved multifidelity Monte Carlo estimators based on normalizing flows and dimensionality reduction techniques.** *Computer methods in applied mechanics and engineering*
  Zanoni, A., Geraci, G., Salvador, M., Menon, K., Marsden, A. L., Schiavazzi, D. E.
  2024; 429

- **SDF4CHD: Generative modeling of cardiac anatomies with congenital heart defects.** *Medical image analysis*
  Kong, F., Stocker, S., Choi, P. S., Ma, M., Ennis, D. B., Marsden, A. L.
  2024; 97: 103293

- **Digital twinning of cardiac electrophysiology for congenital heart disease.** *Journal of the Royal Society, Interface*
  Salvador, M., Kong, F., Peirlinck, M., Parker, D. W., Chubb, H., Dubin, A. M., Marsden, A. L.
  2024; 21 (215): 20230729

- **Effect of graft sizing in valve-sparing aortic root replacement for bicuspid aortic valve: The Goldilocks ratio.** *JTCVS techniques*
  Choi, P. S., Sharir, A., Ono, Y., Shibata, M., Kaiser, A. D., Zhu, Y., Marsden, A. L., Woo, Y. J., Ma, M. R., Kim, J. B.
  2024; 25: 1-7

- **A mechanically consistent unified formulation for fluid-porous-structure-contact interaction.** *Computer methods in applied mechanics and engineering*
  Gerosa, F. M., Marsden, A. L.
  2024; 425

- **Quantification and Visualization of CT Myocardial Perfusion Imaging to Detect Ischemia-Causing Coronary Arteries.** *IEEE transactions on medical imaging*
  Khan, M. O., Seresti, A. A., Menon, K., Marsden, A. L., Nieman, K.
  2024; PP

- **A mechanically consistent unified formulation for fluid-porous-structure-contact interaction** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
  Gerosa, F. M., Marsden, A. L.
  2024; 425

- **Cardiovascular fluid dynamics: a journey through our circulation** *FLOW*
  Menon, K., Hu, Z., Marsden, A. L.
  2024; 4

- **Personalized coronary and myocardial blood flow models incorporating CT perfusion imaging and synthetic vascular trees.** *Npj imaging*
  Menon, K., Khan, M. O., Sexton, Z. A., Richter, J., Nguyen, P. K., Malik, S. B., Boyd, J., Nieman, K., Marsden, A. L.
  2024; 2 (1): 9

- **Hemodynamics and Wall Mechanics of Vascular Graft Failure.** *Arteriosclerosis, thrombosis, and vascular biology*
  Szafron, J. M., Heng, E. E., Boyd, J., Humphrey, J. D., Marsden, A. L.
  2024

- **IMPACT OF CARDIAC FIBER ORIENTATION ON ELECTRICAL DYSSYNCHRONY IN VENTRICULAR ECTOPY**
  Perkins, S. J., Salvador, M., Hu, Z., Tikenogullari, O., Kong, F., Narayan, S. M., Marsden, A.
  ELSEVIER SCIENCE INC.2024: 88

- **IMPACT OF CARDIAC FIBER ORIENTATION ON ELECTRICAL DYSSYNCHRONY IN VENTRICULAR ECTOPY**
  Perkins, S. J., Salvador, M., Hu, Z., Tikenogullari, O., Kong, F., Narayan, S. M., Marsden, A.
  ELSEVIER SCIENCE INC.2024: 88

- **A probabilistic neural twin for treatment planning in peripheral pulmonary artery stenosis.** *International journal for numerical methods in biomedical engineering*
  Lee, J. D., Richter, J., Pfaller, M. R., Szafron, J. M., Menon, K., Zanoni, A., Ma, M. R., Feinstein, J. A., Kreutzer, J., Marsden, A. L., Schiavazzi, D. E.
  2024: e3820

- **Tissue engineered vascular grafts are resistant to the formation of dystrophic calcification.** *Nature communications*
  Turner, M. E., Blum, K. M., Watanabe, T., Schwarz, E. L., Nabavinia, M., Leland, J. T., Villarreal, D. J., Schwartzman, W. E., Chou, T. H., Baker, P. B., Matsumura, G., Krishnamurthy, R., Yates, et al
  2024; 15 (1): 2187

- **A Modular Framework for Implicit 3D-0D Coupling in Cardiac Mechanics.** *Computer methods in applied mechanics and engineering*
  Brown, A. L., Salvador, M., Shi, L., Pfaller, M. R., Hu, Z., Harold, K. E., Hsiai, T., Vedula, V., Marsden, A. L.
  2024; 421

- **Non-invasive Estimation of Pressure Drop Across Aortic Coarctations: Validation of 0D and 3D Computational Models with In Vivo Measurements.** *Annals of biomedical engineering*
  Nair, P. J., Pfaller, M. R., Dual, S. A., McElhinney, D. B., Ennis, D. B., Marsden, A. L.
  2024
- **Computational approaches for mechanobiology in cardiovascular development and diseases.** *Current topics in developmental biology*
  Brown, A. L., Sexton, Z. A., Hu, Z., Yang, W., Marsden, A. L.
  2024; 156: 19-50
- **Virtual shape-editing of patient-specific vascular models using Regularized Kelvinlets.** *IEEE transactions on bio-medical engineering*
  Pham, J., Kong, F., James, D. L., Marsden, A. L.
  2024; PP
- **Computational Modelling of CRT in Congenital Heart Disease: Fantasy or the Future?** *Europace : European pacing, arrhythmias, and cardiac electrophysiology : journal of the working groups on cardiac pacing, arrhythmias, and cardiac cellular electrophysiology of the European Society of Cardiology*
  Chubb, H., Salvador, M., Marsden, A. L.
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