



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, and the Biomedical Engineering Society. 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. She has published over 160 peer reviewed journal papers, and has received funding from the NSF, NIH, and several private foundations. She is currently on the editorial boards of several leading journals in biomechanics and computational biology. 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

- 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)
- Associate Editor, PLOS Computational Biology (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

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)

2022-23

- Computational Modeling in the Cardiovascular System: BIOE 285, CME 285, ME 285 (Win)
- Introduction to Numerical Methods for Engineering: CME 206, ME 300C (Spr)

2021-22

- Mathematical Modeling of Biological Systems: BIOE 209, CME 209 (Win)
- Seminar in Fluid Mechanics: ENGR 298 (Win)

2020-21

- Computational Modeling in the Cardiovascular System: BIOE 285, CME 285, ME 285 (Spr)
- Mathematical Modeling of Biological Systems: BIOE 209, CME 209 (Win)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Tyler Cork, Marcus Forst, Ariel Hannum, Kimberly Liu, Julio Oscanoa Aida

Postdoctoral Faculty Sponsor

David Codoni, Fanwei Kong, Karthik Menon, Matteo Salvador, Marisa Schmidt Bazzi, Andrea Zanoni

Doctoral Dissertation Advisor (AC)

Aaron Brown, Nicholas Dorn, Zinan Hu, Elena Martinez, Priya Nair, Lazaros Papamanolis, Jonathan Pham, Natalia Rubio, Zachary Sexton

Doctoral Dissertation Co-Advisor (AC)

XinYi Liang

Doctoral (Program)

Rocky An, Aditi Merchant, Priya Nair, Zachary Sexton

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

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

Publications

PUBLICATIONS

- **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
- **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
- **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.
2024
- **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
- **Simulation-Based Design of Bicuspidization of the Aortic Valve.** *The Journal of thoracic and cardiovascular surgery*
Kaiser, A. D., Haidar, M. A., Choi, P. S., Sharir, A., Marsden, A. L., Ma, M. R.
2024
- **Branched Latent Neural Maps.** *Computer methods in applied mechanics and engineering*
Salvador, M., Marsden, A. L.
2024; 418 (Pt A)
- **Hemodynamic effects of entry and exit tear size in aortic dissection evaluated with in vitro magnetic resonance imaging and fluid-structure interaction simulation.** *Scientific reports*
Zimmermann, J., Bäuml, K., Loecher, M., Cork, T. E., Marsden, A. L., Ennis, D. B., Fleischmann, D.
2023; 13 (1): 22557
- **A Fluid-Solid-Growth Solver for Cardiovascular Modeling.** *Computer methods in applied mechanics and engineering*
Schwarz, E. L., Pfaller, M. R., Szafron, J. M., Latorre, M., Lindsey, S. E., Breuer, C. K., Humphrey, J. D., Marsden, A. L.
2023; 417 (Pt B)
- **Digital twinning of cardiac electrophysiology for congenital heart disease.** *bioRxiv : the preprint server for biology*
Salvador, M., Kong, F., Peirlinck, M., Parker, D. W., Chubb, H., Dubin, A. M., Marsden, A. L.
2023
- **Learning reduced-order models for cardiovascular simulations with graph neural networks.** *Computers in biology and medicine*
Pegolotti, L., Pfaller, M. R., Rubio, N. L., Ding, K., Brugarolas Brufau, R., Darve, E., Marsden, A. L.
2023; 168: 107676
- **SDF4CHD: Generative Modeling of Cardiac Anatomies with Congenital Heart Defects.** *ArXiv*
Kong, F., Stocker, S., Choi, P. S., Ma, M., Ennis, D. B., Marsden, A.
2023
- **Longitudinal investigation of aortic dissection in mice with computational fluid dynamics.** *Computer methods in biomechanics and biomedical engineering*
Bäuml, K., Phillips, E. H., Grande Gutiérrez, N., Fleischmann, D., Marsden, A. L., Goergen, C. J.
2023: 1-14
- **Non-invasive estimation of pressure drop across aortic coarctations: validation of 0D and 3D computational models with in vivo measurements.** *medRxiv : the preprint server for health sciences*

- Nair, P. J., Pfaller, M. R., Dual, S. A., McElhinney, D. B., Ennis, D. B., Marsden, A. L.
2023
- **A computational growth and remodeling framework for adaptive and maladaptive pulmonary arterial hemodynamics.** *Biomechanics and modeling in mechanobiology*
Szafron, J. M., Yang, W., Feinstein, J. A., Rabinovitch, M., Marsden, A. L.
2023
 - **Personalized coronary and myocardial blood flow models incorporating CT perfusion imaging and synthetic vascular trees.** *medRxiv : the preprint server for health sciences*
Menon, K., Khan, M. O., Sexton, Z. A., Richter, J., Nieman, K., Marsden, A. L.
2023
 - **Rapid model-guided design of organ-scale synthetic vasculature for biomanufacturing.** *ArXiv*
Sexton, Z. A., Hudson, A. R., Herrmann, J. E., Shiwerski, D. J., Pham, J., Szafron, J. M., Wu, S. M., Skylar-Scott, M., Feinberg, A. W., Marsden, A.
2023
 - **Passive performance evaluation and validation of a viscous impeller pump for subpulmonary fontan circulatory support.** *Scientific reports*
Yang, W., Conover, T. A., Figliola, R. S., Giridharan, G. A., Marsden, A. L., Rodefeld, M. D.
2023; 13 (1): 12668
 - **Assessing Differences in Aortic Haemodynamics Between Two- Versus Four-Vessel Fenestrated Endovascular Aneurysm Repair using Patient-Specific Computational Flow Simulation.** *European journal of vascular and endovascular surgery : the official journal of the European Society for Vascular Surgery*
Tran, K., Kaladji, A., Yang, W., Marsden, A. L., Lee, J. T.
2023
 - **Comparison of Immersed Boundary Simulations of Heart Valve Hemodynamics Against In Vitro 4D Flow MRI Data.** *Annals of biomedical engineering*
Kaiser, A. D., Schiavone, N. K., Elkins, C. J., McElhinney, D. B., Eaton, J. K., Marsden, A. L.
2023
 - **Effects of cardiac growth on electrical dyssynchrony in the single ventricle patient.** *Computer methods in biomechanics and biomedical engineering*
Tiken#ullar#, O. Z., Peirlinck, M., Chubb, H., Dubin, A. M., Kuhl, E., Marsden, A. L.
2023: 1-17
 - **Improved Right Ventricular Energy Efficiency by 4-Dimensional Flow Magnetic Resonance Imaging After Harmony Valve Implantation.** *JACC. Advances*
Woo, J. P., Dong, M. L., Kong, F., McElhinney, D. B., Schiavone, N., Chan, F., Lui, G. K., Haddad, F., Bernstein, D., Marsden, A.
2023; 2 (3)
 - **A Computational Growth and Remodeling Framework for Adaptive and Maladaptive Pulmonary Arterial Hemodynamics.** *bioRxiv : the preprint server for biology*
Szafron, J. M., Yang, W., Feinstein, J. A., Rabinovitch, M., Marsden, A. L.
2023
 - **Investigating the hemodynamics of Berlin Heart EXCOR support in Norwood patients across diverse clinical scenarios with computational modeling.** *Artificial organs*
Yuan, V., De Gaetano, F., Osouli, K., Marsden, A. L., Costantino, M. L.
2023
 - **Hemodynamic Effects of Entry and Exit Tear Size in Aortic Dissection Evaluated with In Vitro Magnetic Resonance Imaging and Fluid-Structure Interaction Simulation.** *ArXiv*
Zimmermann, J., Bäumlner, K., Loecher, M., Cork, T. E., Marsden, A. L., Ennis, D. B., Fleischmann, D.
2023
 - **Predictors of Myocardial Ischemia in Patients with Kawasaki Disease: Insights from Patient-Specific Simulations of Coronary Hemodynamics.** *Journal of cardiovascular translational research*
Menon, K., Seo, J., Fukazawa, R., Ogawa, S., Kahn, A. M., Burns, J. C., Marsden, A. L.
2023
 - **Beyond CFD: Emerging methodologies for predictive simulation in cardiovascular health and disease.** *Biophysics reviews*
Schwarz, E. L., Pegolotti, L., Pfaller, M. R., Marsden, A. L.
2023; 4 (1): 011301

- **Recent advances in quantifying the mechanobiology of cardiac development via computational modeling.** *Current opinion in biomedical engineering*
Brown, A. L., Gerosa, F. M., Wang, J., Hsiai, T., Marsden, A. L.
2023; 25
- **Passive Performance Evaluation and Validation of a Viscous Impeller Pump for Subpulmonary Fontan Circulatory Support.** *Research square*
Yang, W., Conover, T. A., Figliola, R. S., Giridharan, G. A., Marsden, A. L., Rodefeld, M. D.
2023
- **Hemodynamic Effects of Entry Versus Exit Tear Size and Tissue Stiffness in Simulations of Aortic Dissection**
Baumler, K., Zimmermann, J., Ennis, D. B., Marsden, A. L., Fleischmann, D., Tavares, J. M., Bourauel, C., Geris, L., Slote, J. V.
SPRINGER INTERNATIONAL PUBLISHING AG.2023: 143-152
- **Improved Right Ventricular Energy Efficiency by 4-Dimensional Flow Magnetic Resonance Imaging After Harmony Valve Implantation** *JACC:Advances*
Woo, J. P., Dong, M. L., Kong, F., McElhinney, D. B., Schiavone, N., Chan, F., Lui, G. K., Haddad, F., Bernstein, D., Marsden, A.
2023; 2 (3)
- **A matched-pair case control study identifying hemodynamic predictors of cerebral aneurysm growth using computational fluid dynamics.** *Frontiers in physiology*
Weiss, A. J., Panduro, A. O., Schwarz, E. L., Sexton, Z. A., Lan, I. S., Geisbush, T. R., Marsden, A. L., Telischak, N. A.
2023; 14: 1300754
- **4D flow cardiovascular magnetic resonance recovery profiles following pulmonary endarterectomy in chronic thromboembolic pulmonary hypertension.** *Journal of cardiovascular magnetic resonance : official journal of the Society for Cardiovascular Magnetic Resonance*
Dong, M. L., Azarine, A., Haddad, F., Amsallem, M., Kim, Y., Yang, W., Fadel, E., Aubrege, L., Loecher, M., Ennis, D., Pavec, J. L., Vignon-Clementel, I., Feinstein, et al
2022; 24 (1): 59
- **High Shear Stress Decreases ERG Causing Endothelial to Mesenchymal Transition and Pulmonary Arterial Hypertension**
Shinohara, T., Moonen, J. A., Okamura, K., Szafron, J., Taylor, S., Isobe, S., Dong, M. L., Cao, A., Wang, L., Marsden, A. L., Korbelin, J., Rabinovitch, M.
LIPPINCOTT WILLIAMS & WILKINS.2022
- **svMorph: Interactive Geometry-Editing Tools for Virtual Patient-Specific Vascular Anatomies.** *Journal of biomechanical engineering*
Pham, J., Wyetzner, S., Pfaller, M., Parker, D., James, D., Marsden, A.
2022
- **Patient-Specific Computational Flow Simulation Reveals Significant Differences in Paravisceral Aortic Hemodynamics Between Fenestrated and Branched Endovascular Aneurysm Repair**
Tran, K., DeGlise, S., Deslarzes-Dubuis, C., Kaladji, A., Yang, W., Marsden, A., Lee, J.
MOSBY-ELSEVIER.2022: E83-E84
- **How viscous is the beating heart?: Insights from a computational study.** *Computational mechanics*
Tikeno#ullar#, O. Z., Costabal, F. S., Yao, J., Marsden, A., Kuhl, E.
2022; 70 (3): 565-579
- **Biodegradable external wrapping promotes favorable adaptation in an ovine vein graft model.** *Acta biomaterialia*
Ramachandra, A. B., Wang, H., Wnorowski, A., Schwarz, E. L., Pickering, J., Heiler, J. C., Lucian, H. J., Hironaka, C. E., Tran, N. A., Liu, Y., Khan, M. O., Obafemi, O., Tada, et al
2022
- **Validation of the Reduced Unified Continuum Formulation Against In Vitro 4D-Flow MRI.** *Annals of biomedical engineering*
Lan, I. S., Liu, J., Yang, W., Zimmermann, J., Ennis, D. B., Marsden, A. L.
2022
- **Framework for patient-specific simulation of hemodynamics in heart failure with counterpulsation support.** *Frontiers in cardiovascular medicine*
Arduini, M., Pham, J., Marsden, A. L., Chen, I. Y., Ennis, D. B., Dual, S. A.
2022; 9: 895291
- **Blood flow modeling reveals improved collateral artery performance during the regenerative period in mammalian hearts.** *Nature cardiovascular research*
Anbazzhakan, S., Rios Coronado, P. E., Sy-Quia, A. N., Seow, L. W., Hands, A. M., Zhao, M., Dong, M. L., Pfaller, M. R., Amir, Z. A., Raftrey, B. C., Cook, C. K., D'Amato, G., Fan, et al

2022; 1 (8): 775-790

- **Automated generation of 0D and 1D reduced-order models of patient-specific blood flow.** *International journal for numerical methods in biomedical engineering*
Pfaller, M. R., Pham, J., Verma, A., Pegolotti, L., Wilson, N. M., Parker, D. W., Yang, W., Marsden, A. L.
2022: e3639
- **Elucidating tricuspid Doppler signal interpolation and its implication for assessing pulmonary hypertension** *PULMONARY CIRCULATION*
Dual, S. A., Verdonk, C., Amsallem, M., Pham, J., Obasohan, C., Nataf, P., McElhinney, D. B., Arunamata, A., Kuznetsova, T., Zamanian, R., Feinstein, J. A., Marsden, A., Haddad, et al
2022; 12 (3): e12125
- **Controlled Comparison of Simulated Hemodynamics Across Tricuspid and Bicuspid Aortic Valves.** *Annals of biomedical engineering*
Kaiser, A. D., Shad, R., Schiavone, N., Hiesinger, W., Marsden, A. L.
2022
- **Patient-specific fluid-structure simulations of anomalous aortic origin of right coronary arteries.** *JTCVS techniques*
Jiang, M. X., Khan, M. O., Ghobrial, J., Rogers, I. S., Pettersson, G. B., Blackstone, E. H., Marsden, A. L.
2022; 13: 144-162
- **How viscous is the beating heart? Insights from a computational study** *COMPUTATIONAL MECHANICS*
Tikenogullari, O., Costabal, F., Yao, J., Marsden, A., Kuhl, E.
2022
- **A reduced unified continuum formulation for vascular fluid-structure interaction** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
Lan, I. S., Liu, J., Yang, W., Marsden, A. L.
2022; 394
- **Colocalization of Coronary Plaque with Wall Shear Stress in Myocardial Bridge Patients.** *Cardiovascular engineering and technology*
Khan, M. O., Nishi, T., Imura, S., Seo, J., Wang, H., Honda, Y., Nieman, K., Rogers, I. S., Tremmel, J. A., Boyd, J., Schnittger, I., Marsden, A.
2022
- **Virtual Transcatheter Interventions for Peripheral Pulmonary Artery Stenosis in Williams and Alagille Syndromes.** *Journal of the American Heart Association*
Lan, I. S., Yang, W., Feinstein, J. A., Kreutzer, J., Collins, R. T., Ma, M., Adamson, G. T., Marsden, A. L.
2022: e023532
- **Comparison of Hemodynamic Changes Associated With Two-Versus Four-Vessel Fenestrated Endovascular Aneurysm Repair Using Patient-specific Computational Flow Modeling**
Tran, K., Kaladji, A., Yang, W., Marsden, A., Lee, J.
MOSBY-ELSEVIER.2022: E41-E42
- **Computational simulations of the 4D micro-circulatory network in zebrafish tail amputation and regeneration.** *Journal of the Royal Society, Interface*
Roustaei, M., In Baek, K., Wang, Z., Cavallero, S., Satta, S., Lai, A., O'Donnell, R., Vedula, V., Ding, Y., Marsden, A. L., Hsiai, T. K.
2022; 19 (187): 20210898
- **SimVascular Gateway for Education and Research**
Tran, J., Abeyasinghe, E., LaDisa, J., Marsden, A., Pierce, M., ACM
ASSOC COMPUTING MACHINERY.2022
- **Numerical investigation of abdominal aortic aneurysm hemodynamics using the reduced unified continuum formulation for vascular fluid-structure interaction** *Forces in Mechanics*
Lan, I. S., Liu, J., Yang, W., Marsden, A. L.
2022; 7
- **A Mechanistic Lumped Parameter Model of the Berlin Heart EXCOR to Analyze Device Performance and Physiologic Interactions.** *Cardiovascular engineering and technology*
Yuan, V., Verma, A., Schiavone, N. K., Rosenthal, D. N., Marsden, A. L.
2022
- **Patient-specific changes in aortic hemodynamics is associated with thrombotic risk after fenestrated endovascular aneurysm repair with large diameter endografts.** *JVS-vascular science*

- Tran, K., Feliciano, K. B., Yang, W., Schwarz, E. L., Marsden, A. L., Dalman, R. L., Lee, J. T.
2022; 3: 219-231
- **Tissue engineered vascular grafts transform into autologous neovessels capable of native function and growth.** *Communications medicine*
Blum, K. M., Zbinden, J. C., Ramachandra, A. B., Lindsey, S. E., Szafron, J. M., Reinhardt, J. W., Heitkemper, M., Best, C. A., Mirhaidari, G. J., Chang, Y., Ulziibayar, A., Kelly, J., Shah, et al
2022; 2: 3
 - **Preoperative Computed Tomography Angiography Reveals Leaflet-Specific Calcification and Excursion Patterns in Aortic Stenosis.** *Circulation. Cardiovascular imaging*
Chen, I. Y., Vedula, V., Malik, S. B., Liang, T., Chang, A. Y., Chung, K. S., Sayed, N., Tsao, P. S., Giacomini, J. C., Marsden, A. L., Wu, J. C.
1800: CIRCIMAGING121012884
 - **Geometric uncertainty in patient-specific cardiovascular modeling with convolutional dropout networks** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
Maher, G. D., Fleeter, C. M., Schiavazzi, D. E., Marsden, A. L.
2021; 386
 - **Geometric Uncertainty in Patient-Specific Cardiovascular Modeling with Convolutional Dropout Networks.** *Computer methods in applied mechanics and engineering*
Maher, G. D., Fleeter, C. M., Schiavazzi, D. E., Marsden, A. L.
2021; 386
 - **A continuum and computational framework for viscoelastodynamics: I. Finite deformation linear models** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
Liu, J., Latorre, M., Marsden, A. L.
2021; 385
 - **A design-based model of the aortic valve for fluid-structure interaction.** *Biomechanics and modeling in mechanobiology*
Kaiser, A. D., Shad, R., Hiesinger, W., Marsden, A. L.
2021
 - **Computational modeling of blood component transport related to coronary artery thrombosis in Kawasaki disease.** *PLoS computational biology*
Grande Gutierrez, N., Alber, M., Kahn, A. M., Burns, J. C., Mathew, M., McCrindle, B. W., Marsden, A. L.
2021; 17 (9): e1009331
 - **Publisher Correction: Hemodynamic performance of tissue-engineered vascular grafts in Fontan patients.** *NPJ Regenerative medicine*
Schwarz, E. L., Kelly, J. M., Blum, K. M., Hor, K. N., Yates, A. R., Zbinden, J. C., Verma, A., Lindsey, S. E., Ramachandra, A. B., Szafron, J. M., Humphrey, J. D., Shin'oka, T., Marsden, et al
2021; 6 (1): 47
 - **Hemodynamic performance of tissue-engineered vascular grafts in Fontan patients.** *NPJ Regenerative medicine*
Schwarz, E. L., Kelly, J. M., Blum, K. M., Hor, K. N., Yates, A. R., Zbinden, J. C., Verma, A., Lindsey, S. E., Ramachandra, A. B., Szafron, J. M., Humphrey, J. D., Shin'oka, T., Marsden, et al
2021; 6 (1): 38
 - **Model order reduction of flow based on a modular geometrical approximation of blood vessels.** *Computer methods in applied mechanics and engineering*
Pegolotti, L., Pfaller, M. R., Marsden, A. L., Deparis, S.
2021; 380
 - **On the Periodicity of Cardiovascular Fluid Dynamics Simulations.** *Annals of biomedical engineering*
Pfaller, M. R., Pham, J., Wilson, N. M., Parker, D. W., Marsden, A. L.
2021
 - **Patient-Specific Computational Fluid Dynamics Reveal Localized Flow Patterns Predictive of Post-Left Ventricular Assist Device Aortic Incompetence.** *Circulation. Heart failure*
Shad, R., Kaiser, A. D., Kong, S., Fong, R., Quach, N., Bowles, C., Kasinpila, P., Shudo, Y., Teuteberg, J., Woo, Y. J., Marsden, A. L., Hiesinger, W.
2021: CIRCHEARTFAILURE120008034
 - **RIGHT VENTRICULAR OUTFLOW TRACT AND PULMONARY ARTERY GEOMETRY IN PATIENTS WITH REPAIRED TETRALOGY OF FALLOT PRIOR TO PULMONARY VALVE REPLACEMENT-CHARACTERIZATION AND LONGITUDINAL ASSOCIATION WITH BIOPROSTHETIC VALVE FUNCTION**

- Arana, V., Chan, F., Schiavone, N., Reddy, S., Hanley, F., Marsden, A., McElhinney, D.
ELSEVIER SCIENCE INC.2021: 1410
- **Patient-specific computational fluid dynamic simulation for assessing hemodynamic changes following branched endovascular aneurysm repair: A pilot study**
Tran, K., Deslarzes, C., Marsden, A., Lee, J., Deglise, S.
OXFORD UNIV PRESS.2021
 - **A unified continuum and variational multiscale formulation for fluids, solids, and fluid-structure interaction (vol 337, pg 549, 2018) COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING**
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