




Alison Marsden

Professor of Pediatrics (Cardiology) and of Bioengineering

Pediatrics - Cardiology

 Curriculum Vitae available Online

Bio

BIO

Alison Marsden is a Professor and Wall Center scholar 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. She has published over 130 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
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Institute for Computational and Mathematical Engineering (ICME)

HONORS AND AWARDS

- 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

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: CME 285 (Spr)
- Mathematical Modeling of Biological Systems: BIOE 209, CME 209 (Win)

2019-20

- Introduction to Scientific Computing: CME 108, MATH 114 (Win)

2018-19

- Computational Modeling in the Cardiovascular System: BIOE 285, CME 285, ME 285 (Spr)
- Introduction to Scientific Computing: CME 108, MATH 114 (Win)

STANFORD ADVISEES

Med Scholar Project Advisor

Veronica Toro

Doctoral Dissertation Reader (AC)

Tyler Cork, Charles Huang, Kimberly Liu, Alexis Seymour, Oguz Ziya Tikenogullari, yasaman shirian

Postdoctoral Faculty Sponsor

Fannie Gerosa, Alexander Kaiser, Karthik Menon, Luca Pegolotti, Martin Pfaller, Jason Szafron

Doctoral Dissertation Advisor (AC)

Suhaas Anbazhakan, Casey Fleeter Masuda, Priya Nair, Jonathan Pham, Natalia Rubio, Erica Schwarz, Zachary Sexton

Master's Program Advisor

Jo Ann Efobi

Doctoral (Program)

Mackenzie Carlson, Eva Gonzalez Diaz, Priya Nair, R. Andres Parra Sperberg, Zachary Sexton, Yuanjia Zhu

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

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

Publications

PUBLICATIONS

- **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
- **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
- **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*
Liu, J., Marsden, A. L.
2021; 375

- **Fluid-structure interaction modeling of blood flow in the pulmonary arteries using the unified continuum and variational multiscale formulation (Repinted from vol 107, 103556, 2020) MECHANICS RESEARCH COMMUNICATIONS**
Liu, J., Yang, W., Lan, I. S., Marsden, A. L.
2021; 112
- **Computational evaluation of venous graft geometries in coronary artery bypass surgery. *Seminars in thoracic and cardiovascular surgery***
Seo, J. n., Ramachandra, A. B., Boyd, J. n., Marsden, A. L., Kahn, A. M.
2021
- **Predictive Modeling of Secondary Pulmonary Hypertension in Left Ventricular Diastolic Dysfunction. *Frontiers in physiology***
Harrod, K. K., Rogers, J. L., Feinstein, J. A., Marsden, A. L., Schiavazzi, D. E.
2021; 12: 666915
- **Computational simulation-derived hemodynamic and biomechanical properties of the pulmonary arterial tree early in the course of ventricular septal defects. *Biomechanics and modeling in mechanobiology***
Dong, M. L., Lan, I. S., Yang, W., Rabinovitch, M., Feinstein, J. A., Marsden, A. L.
2021
- **Standard CPR versus interposed abdominal compression CPR in shunted single ventricle patients: comparison using a lumped parameter mathematical model. *Cardiology in the young***
Stromberg, D., Carvalho, K., Marsden, A., Mery, C. M., Immanuel, C., Mizrahi, M., Yang, W.
2021: 1-7
- **Patient-specific computational flow modelling for assessing hemodynamic changes following fenestrated endovascular aneurysm repair. *JVS-vascular science***
Tran, K., Yang, W., Marsden, A., Lee, J. T., Stanford, C.
2021; 2: 53-69
- **On the impact of vessel wall stiffness on quantitative flow dynamics in a synthetic model of the thoracic aorta. *Scientific reports***
Zimmermann, J. n., Loecher, M. n., Kolawole, F. O., Bäuml, K. n., Gifford, K. n., Dual, S. A., Levenston, M. n., Marsden, A. L., Ennis, D. B.
2021; 11 (1): 6703
- **In Vitro Assessment of Right Ventricular Outflow Tract Anatomy and Valve Orientation Effects on Bioprosthetic Pulmonary Valve Hemodynamics. *Cardiovascular engineering and technology***
Schiavone, N. K., Elkins, C. J., McElhinney, D. B., Eaton, J. K., Marsden, A. L.
2021
- **A concurrent implementation of the surrogate management framework with application to cardiovascular shape optimization OPTIMIZATION AND ENGINEERING**
Verma, A., Wong, K., Marsden, A. L.
2020; 21 (4): 1487–1536
- **Preoperative Computed Tomography Angiography Reveals Leaflet-specific Contribution to Aortic Stenosis Influenced by Local Coronary Factors**
Chen, I. Y., Vedula, V., Malik, S. B., Liang, T., Chung, K. S., Sayed, N., Tsao, P. S., Giacomini, J. C., Marsden, A. L., Wu, J. C.
LIPPINCOTT WILLIAMS & WILKINS.2020
- **Patient-specific Fluid Structure Interaction Simulations of Anomalous Origins of Right Coronary Arteries in Adults Correlate With Measured Instantaneous Wave-free Ratio**
Jiang, M. X., Khan, M. O., Ghobrial, J., Rogers, I. S., Blackstone, E. H., Marsden, A. L.
LIPPINCOTT WILLIAMS & WILKINS.2020
- **Semi-automated Analysis of Tricuspid Regurgitation Doppler Profile for Detection and Evaluation of Pulmonary Hypertension**
Dual, S. A., Amsellem, M., McElhinney, D., Zamanian, R., Feinstein, J., Haddad, F., Marsden, A.
LIPPINCOTT WILLIAMS & WILKINS.2020
- **Cardiac Output and Valve Orientation Affect Blood Flow Patterns Local to Bioprosthetic Pulmonary Valves in Tetralogy of Fallot**
Schiavone, N., Elkins, C., McElhinney, D. B., Eaton, J. K., Marsden, A. L.
LIPPINCOTT WILLIAMS & WILKINS.2020
- **Validation of Wall Shear Stress Assessment in Non-invasive Coronary CTA versus Invasive Imaging: A Patient-Specific Computational Study. *Annals of biomedical engineering***

- Eslami, P., Hartman, E. M., Albaghadai, M., Karady, J., Jin, Z., Thondapu, V., Cefalo, N. V., Lu, M. T., Coskun, A., Stone, P. H., Marsden, A., Hoffmann, U., Wentzel, et al
2020
- **A note on the accuracy of the generalized-alpha scheme for the incompressible Navier-Stokes equations** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*
Liu, J., Lan, I. S., Tikenogullari, O. Z., Marsden, A. L.
2020
 - **Vascular adaptation in the presence of external support - A modeling study.** *Journal of the mechanical behavior of biomedical materials*
Ramachandra, A. B., Latorre, M., Szafron, J. M., Marsden, A. L., Humphrey, J. D.
2020; 110: 103943
 - **The nested block preconditioning technique for the incompressible Navier-Stokes equations with emphasis on hemodynamic simulations.** *Computer methods in applied mechanics and engineering*
Liu, J., Yang, W., Dong, M., Marsden, A. L.
2020; 367
 - **Fluid-structure interaction modeling of blood flow in the pulmonary arteries using the unified continuum and variational multiscale formulation.** *Mechanics research communications*
Liu, J., Yang, W., Lan, I. S., Marsden, A. L.
2020; 107
 - **Patient-Specific Computational Flow Modelling for Assessing Hemodynamic Changes Following Fenestrated Endovascular Aneurysm Repair**
Tran, K., Yang, W., Marsden, A., Lee, J. T.
MOSBY-ELSEVIER.2020: E182–E183
 - **Multilevel and multifidelity uncertainty quantification for cardiovascular hemodynamics.** *Computer methods in applied mechanics and engineering*
Fleeter, C. M., Geraci, G., Schiavazzi, D. E., Kahn, A. M., Marsden, A. L.
2020; 365
 - **The effects of clinically-derived parametric data uncertainty in patient-specific coronary simulations with deformable walls.** *International journal for numerical methods in biomedical engineering*
Seo, J., Schiavazzi, D. E., Kahn, A. M., Marsden, A. L.
2020
 - **Effect of Wall Elasticity on Hemodynamics and Wall Shear Stress in Patient-Specific Simulations in the Coronary Arteries** *JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME*
Eslami, P., Tran, J., Jin, Z., Karady, J., Sotoodeh, R., Lu, M. T., Hoffmann, U., Marsden, A.
2020; 142 (2)
 - **Fluid-structure interaction simulations of patient-specific aortic dissection.** *Biomechanics and modeling in mechanobiology*
Baumler, K., Vedula, V., Sailer, A. M., Seo, J., Chiu, P., Mistelbauer, G., Chan, F. P., Fischbein, M. P., Marsden, A. L., Fleischmann, D.
2020
 - **Use of patient-specific computational models for optimization of aortic insufficiency after implantation of left ventricular assist device.** *The Journal of thoracic and cardiovascular surgery*
Kasinpila, P. n., Kong, S. n., Fong, R. n., Shad, R. n., Kaiser, A. D., Marsden, A. L., Woo, Y. J., Hiesinger, W. n.
2020
 - **The nested block preconditioning technique for the incompressible Navier–Stokes equations with emphasis on hemodynamic simulations** *Computer Methods in Applied Mechanics and Engineering*
Liu, J., Yang, W., Dong, M., Marsden, A. L.
2020; 367
 - **Spontaneous reversal of stenosis in tissue-engineered vascular grafts.** *Science translational medicine*
Draws, J. D., Pepper, V. K., Best, C. A., Szafron, J. M., Cheatham, J. P., Yates, A. R., Hor, K. N., Zbinden, J. C., Chang, Y. C., Mirhaidari, G. J., Ramachandra, A. B., Miyamoto, S. n., Blum, et al
2020; 12 (537)
 - **Low Wall Shear Stress Is Associated with Saphenous Vein Graft Stenosis in Patients with Coronary Artery Bypass Grafting.** *Journal of cardiovascular translational research*

- Khan, M. O., Tran, J. S., Zhu, H. n., Boyd, J. n., Packard, R. R., Karlsberg, R. P., Kahn, A. M., Marsden, A. L.
2020
- **Integrated Image-Based Computational Fluid Dynamics Modeling Software as an Instructional Tool.** *Journal of biomechanical engineering*
Stevens Boster, K. n., Dong, M. n., Oakes, J. n., Bellini, C. n., Rayz, V. n., LaDisa, J. n., Parker, D. n., Wilson, N. n., Shadden, S. C., Marsden, A. n., Goergen, C. n.
2020
 - **Neural Network Vessel Lumen Regression for Automated Lumen Cross-Section Segmentation in Cardiovascular Image-Based Modeling.** *Cardiovascular engineering and technology*
Maher, G. n., Parker, D. n., Wilson, N. n., Marsden, A. n.
2020
 - **Exercise MRI highlights heterogeneity in cardiovascular mechanics among patients with Fontan circulation: proposed protocol for routine evaluation.** *Journal of thoracic disease*
Contijoch, F. n., Li, B. n., Yang, W. n., Silva-Sepulveda, J. A., Vodkin, I. n., Printz, B. n., Vavinskaya, V. n., Hegde, S. n., Marsden, A. n., El-Sabrout, H. n., Alshawabkeh, L. n., Moore, J. W., El-Said, et al
2020; 12 (3): 1204–12
 - **Multi-fidelity estimators for coronary artery circulation models under clinically-informed data uncertainty** *International Journal for Uncertainty Quantification*
Seo, J., Fleeter, C., Kahn, A. M., Marsden, A. L., Schiavazzi, D. E.
2020
 - **Image-based scaling laws for somatic growth and pulmonary artery morphometry from infant- to adulthood.** *American journal of physiology. Heart and circulatory physiology*
Dong, M. L., Yang, W. n., Tamaresis, J. S., Chan, F. P., Zucker, E. J., Kumar, S. n., Rabinovitch, M. n., Marsden, A. L., Feinstein, J. A.
2020
 - **An energy-stable mixed formulation for isogeometric analysis of incompressible hyper-elastodynamics.** *International journal for numerical methods in engineering*
Liu, J., Marsden, A. L., Tao, Z.
2019; 120 (8): 937-963
 - **Performance of preconditioned iterative linear solvers for cardiovascular simulations in rigid and deformable vessels.** *Computational mechanics*
Seo, J., Schiavazzi, D. E., Marsden, A. L.
2019; 64: 717-739
 - **Multiscale computational modeling of biomedical systems: current approaches and payoffs** *CURRENT OPINION IN BIOMEDICAL ENGINEERING*
Peirce-Cottler, S. M., Marsden, A.
2019; 11: A1-A3
 - **Accelerating cardiovascular model building with convolutional neural networks.** *Medical & biological engineering & computing*
Maher, G., Wilson, N., Marsden, A.
2019
 - **An energy-stable mixed formulation for isogeometric analysis of incompressible hyperelastodynamics** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN ENGINEERING*
Liu, J., Marsden, A. L., Tao, Z.
2019
 - **Intracardiac 4D Flow MRI in Congenital Heart Disease: Recommendations on Behalf of the ISMRM Flow & Motion Study Group.** *Journal of magnetic resonance imaging : JMRI*
Zhong, L., Schrauben, E. M., Garcia, J., Uribe, S., Grieve, S. M., Elbaz, M. S., Barker, A. J., Geiger, J., Nordmeyer, S., Marsden, A., Carlsson, M., Tan, R., Garg, et al
2019
 - **Optimization of Tissue Engineered Vascular Graft Design Using Computational Modeling.** *Tissue engineering. Part C, Methods*
Szafron, J. M., B Ramachandra, A., Breuer, C. K., Marsden, A. L., Humphrey, J. D.
2019
 - **Evolution of hemodynamic forces in the pulmonary tree with progressively worsening pulmonary arterial hypertension in pediatric patients** *BIOMECHANICS AND MODELING IN MECHANOBIOLOGY*

- Yang, W., Dong, M., Rabinovitch, M., Chan, F. P., Marsden, A. L., Feinstein, J. A.
2019; 18 (3): 779–96
- **Contractile and hemodynamic forces coordinate Notch1b-mediated outflow tract valve formation** *JCI INSIGHT*
Hsu, J. J., Vedula, V., Baek, K., Chen, C., Chen, J., Chou, M., Lam, J., Subhedar, S., Wang, J., Ding, Y., Chang, C., Lee, J., Demer, et al
2019; 4 (10)
 - **Effect of Wall Elasticity on Hemodynamics and Wall Shear Stress in Patient-Specific Simulations in the Coronary Arteries.** *Journal of biomechanical engineering*
Eslami, P., Tran, J., Jin, Z., Karady, J., Sotoodeh, R., Lu, M. T., Hoffmann, U., Marsden, A.
2019
 - **A robust and efficient iterative method for hyper-elastodynamics with nested block preconditioning.** *Journal of computational physics*
Liu, J., Marsden, A. L.
2019; 383: 72-93
 - **A robust and efficient iterative method for hyper-elastodynamics with nested block preconditioning** *JOURNAL OF COMPUTATIONAL PHYSICS*
Liu, J., Marsden, A. L.
2019; 383: 72–93
 - **Hemodynamic variables in aneurysms are associated with thrombotic risk in children with Kawasaki disease** *INTERNATIONAL JOURNAL OF CARDIOLOGY*
Gutierrez, N., Mathew, M., McCrindle, B., Tran, J. S., Kahn, A. M., Burns, J. C., Marsden, A. L.
2019; 281: 15–21
 - **Patient-Specific Multiscale Modeling of the Assisted Bidirectional Glenn** *ANNALS OF THORACIC SURGERY*
Shang, J. K., Esmaily, M., Verma, A., Reinhartz, O., Figliola, R. S., Hsia, T., Feinstein, J. A., Marsden, A. L.
2019; 107 (4): 1232–40
 - **Uncertainty quantification of simulated biomechanical stimuli in coronary artery bypass grafts.** *Computer methods in applied mechanics and engineering*
Tran, J. S., Schiavazzi, D. E., Kahn, A. M., Marsden, A. L.
2019; 345: 402-428
 - **Uncertainty quantification of simulated biomechanical stimuli in coronary artery bypass grafts** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
Tran, J. S., Schiavazzi, D. E., Kahn, A. M., Marsden, A. L.
2019; 345: 402–28
 - **Hemodynamic variables in aneurysms are associated with thrombotic risk in children with Kawasaki disease.** *International journal of cardiology*
Grande Gutierrez, N., Mathew, M., McCrindle, B. W., Tran, J. S., Kahn, A. M., Burns, J. C., Marsden, A. L.
2019
 - **Evolution of hemodynamic forces in the pulmonary tree with progressively worsening pulmonary arterial hypertension in pediatric patients.** *Biomechanics and modeling in mechanobiology*
Yang, W., Dong, M., Rabinovitch, M., Chan, F. P., Marsden, A. L., Feinstein, J. A.
2019
 - **Contractile and hemodynamic forces coordinate Notch1b-mediated outflow tract valve formation.** *JCI insight*
Hsu, J. J., Vedula, V. n., Baek, K. I., Chen, C. n., Chen, J. n., Chou, M. I., Lam, J. n., Subhedar, S. n., Wang, J. n., Ding, Y. n., Chang, C. C., Lee, J. n., Demer, et al
2019; 5
 - **Multiscale Modeling of Superior Cavopulmonary Circulation: Hemi-Fontan And Bidirectional Glenn Are Equivalent.** *Seminars in thoracic and cardiovascular surgery*
Kung, E. n., Corsini, C. n., Marsden, A. n., Vignon-Clementel, I. n., Pennati, G. n., Figliola, R. n., Hsia, T. Y.
2019
 - **Cavopulmonary assist: Long-term reversal of the Fontan paradox.** *The Journal of thoracic and cardiovascular surgery*
Rodefeld, M. D., Marsden, A. n., Figliola, R. n., Jonas, T. n., Neary, M. n., Giridharan, G. A.
2019

- **Expert recommendations on the assessment of wall shear stress in human coronary arteries: existing methodologies, technical considerations, and clinical applications.** *European heart journal*
Gijssen, F. n., Katagiri, Y. n., Barlis, P. n., Bourantas, C. n., Collet, C. n., Coskun, U. n., Daemen, J. n., Dijkstra, J. n., Edelman, E. n., Evans, P. n., van der Heiden, K. n., Hose, R. n., Koo, et al
2019
- **Performance of preconditioned iterative linear solvers for cardiovascular simulations in rigid and deformable vessels.** *COMPUTATIONAL MECHANICS*
Seo, J., Schiavazzi, D. E., Marsden, A. L.
2019
- **Simulating Developmental Cardiac Morphology in Virtual Reality Using a Deformable Image Registration Approach** *ANNALS OF BIOMEDICAL ENGINEERING*
Abiri, A., Ding, Y., Abiri, P., Packard, R., Vedula, V., Marsden, A., Kuo, C., Hsiai, T. K.
2018; 46 (12): 2177–88
- **Multiple Aneurysms AnaTomy CHallenge 2018 (MATCH): Phase I: Segmentation** *CARDIOVASCULAR ENGINEERING AND TECHNOLOGY*
Berg, P., Voss, S., Saalfeld, S., Janiga, G., Bergersen, A. W., Valen-Sendstad, K., Bruening, J., Goubergrits, L., Spuler, A., Cancelliere, N. M., Steinman, D. A., Pereira, V. M., Chiu, et al
2018; 9 (4): 565–81
- **Real-World Variability in the Prediction of Intracranial Aneurysm Wall Shear Stress: The 2015 International Aneurysm CFD Challenge** *CARDIOVASCULAR ENGINEERING AND TECHNOLOGY*
Valen-Sendstad, K., Bergersen, A. W., Shimogonya, Y., Goubergrits, L., Bruening, J., Pallares, J., Cito, S., Piskin, S., Pekkan, K., Geers, A. J., Larrabide, I., Rapaka, S., Mihalef, et al
2018; 9 (4): 544–64
- **Patient-Specific Multiscale Modeling of the Assisted Bidirectional Glenn.** *The Annals of thoracic surgery*
Shang, J. K., Esmaily, M., Verma, A., Reinhartz, O., Figliola, R. S., Hsia, T., Feinstein, J. A., Marsden, A. L.
2018
- **Computational Fluid Dynamics (BypassCFD) Trumps Anatomic Predictors of Saphenous Vein Graft Failure in CABG Patients**
Khan, M., Tran, J. S., Zhu, H., Packard, R. S., Karlsberg, R. P., Kahn, A., Marsden, A. L.
LIPPINCOTT WILLIAMS & WILKINS.2018
- **Contractile and Hemodynamic Forces Promote Cardiac Valve Development via Notch1b-Mediated Endothelial-to-Mesenchymal Transition**
Hsu, J. J., Vedula, V., Baek, K., Chen, C., Ding Yichen, Tintut, Y., Marsden, A. L., Hsiai, T. K.
LIPPINCOTT WILLIAMS & WILKINS.2018
- **Pre-Operative Right Ventricular Outflow Tract and Pulmonary Artery Geometry Predicts Pulmonary Valve Replacement Outcomes in Patients With Tetralogy of Fallot**
Toro Arana, V., Chan, F., Shrivastava, N., McElhinney, D., Reddy, S., Marsden, A.
LIPPINCOTT WILLIAMS & WILKINS.2018
- **A method to quantify mechanobiologic forces during zebrafish cardiac development using 4-D light sheet imaging and computational modeling (vol 13, e1005828, 2017)** *PLOS COMPUTATIONAL BIOLOGY*
Vedula, V., Lee, J., Xu, H., Kuo, C., Hsiai, T. K., Marsden, A. L.
2018; 14 (9): e1006482
- **A unified continuum and variational multiscale formulation for fluids, solids, and fluid-structure interaction** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
Liu, J., Marsden, A. L.
2018; 337: 549–97
- **A unified continuum and variational multiscale formulation for fluids, solids, and fluid-structure interaction.** *Computer methods in applied mechanics and engineering*
Liu, J., Marsden, A. L.
2018; 337: 549-597
- **Spatial and temporal variations in hemodynamic forces initiate cardiac trabeculation** *JCI INSIGHT*
Lee, J., Vedula, V., Baek, K., Chen, J., Hsu, J. J., Ding, Y., Chang, C., Kang, H., Small, A., Fei, P., Chuong, C., Li, R., Demer, et al
2018; 3 (13)

- **Right ventricular stroke work correlates with outcomes in pediatric pulmonary arterial hypertension** *PULMONARY CIRCULATION*
Yang, W., Marsden, A. L., Ogawa, M. T., Sakarovitch, C., Hall, K. K., Rabinovitch, M., Feinstein, J. A.
2018; 8 (3)
- **Developmental Contractile Function Modulates Notch1b-Mediated Valvular Leaflet Development**
Hsu, J. J., Chen, J., Vedula, V., Chen, C., Lee, J., Tintut, Y., Demer, L. L., Marsden, A., Hsiai, T. K.
LIPPINCOTT WILLIAMS & WILKINS.2018
- **Optimization of the Assisted Bidirectional Glenn Procedure for First Stage Single Ventricle Repair.** *World journal for pediatric & congenital heart surgery*
Verma, A., Esmaily, M., Shang, J., Figliola, R., Feinstein, J. A., Hsia, T. Y., Marsden, A. L.
2018; 9 (2): 157-170
- **The future of biomedical engineering - Vascular bioengineering** *CURRENT OPINION IN BIOMEDICAL ENGINEERING*
Marsden, A. L., Truskey, G. A.
2018; 5: III-v
- **Computational simulation of postoperative pulmonary flow distribution in Alagille patients with peripheral pulmonary artery stenosis.** *Congenital heart disease*
Yang, W., Hanley, F. L., Chan, F. P., Marsden, A. L., Vignon-Clementel, I. E., Feinstein, J. A.
2018; 13 (2): 241-250
- **Benchmark problems for numerical treatment of backflow at open boundaries** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN BIOMEDICAL ENGINEERING*
Bertoglio, C., Caiazzo, A., Bazilevs, Y., Braack, M., Esmaily, M., Gravemeier, V., Marsden, A. L., Pironneau, O., Vignon-Clementel, I. E., Wall, W. A.
2018; 34 (2)
- **A Re-Engineered Software Interface and Workflow for the Open-Source SimVascular Cardiovascular Modeling Package.** *Journal of biomechanical engineering*
Lan, H., Updegrave, A., Wilson, N. M., Maher, G. D., Shadden, S. C., Marsden, A. L.
2018; 140 (2)
- **Optimization of the Assisted Bidirectional Glenn Procedure for First Stage Single Ventricle Repair** *Optimization of the Assisted Bidirectional Glenn Procedure for First Stage Single Ventricle Repair*
Verma, A., Esmaily, M., Shang, J., Figliola, R., Feinstein, J., Hsia, T., Marsden, A.
2018; 9 (2): 157-170
- **Right Ventricular Stroke Work Correlates with Outcomes in Pediatric Pulmonary Arterial Hypertension.** *Pulmonary circulation*
Yang, W., Marsden, A. L., Ogawa, M. T., Sakarovitch, C., Hall, K. K., Rabinovitch, M., Feinstein, J. A.
2018: 2045894018780534
- **A re-engineered interface and workflow for the open source SimVascular cardiovascular modeling package** *A re-engineered interface and workflow for the open source SimVascular cardiovascular modeling package*
Lan, H., Updegrave, A., Wilson, N., Maher, G., Shadden, S., Marsden, A.
2018; 140 (2): 024501-024501-11
- **Spatiotemporal Variations in Intracardiac Shear Stress Differentially Modulate Trabeculation for Developmental Contractile Function**
Lee, J., Vedula, V., Ding, Y., Chen, J., Marsden, A., Hsiai, T.
LIPPINCOTT WILLIAMS & WILKINS.2017
- **4-D Light-Sheet Imaging and Moving-Domain Computation Reveal That Oscillatory Shear Index Mediates Endocardial Notch1b Signaling and Valve Development**
Hsu, J. J., Chen, J., Vedula, V., Lee, J., Ding, Y., Marsden, A. L., Hsiai, T. K.
LIPPINCOTT WILLIAMS & WILKINS.2017
- **Computational blood flow simulations in Kawasaki disease patients: Insight into coronary artery aneurysm hemodynamics.** *Global cardiology science & practice*
Grande Gutierrez, N., Kahn, A., Burns, J. C., Marsden, A. L.
2017; 2017 (3): e201729
- **Assessment of Coronary Artery Aneurysms Caused by Kawasaki Disease Using Transluminal Attenuation Gradient Analysis of Computerized Tomography Angiograms.** *The American journal of cardiology*

- Grande Gutierrez, N., Shirinsky, O., Gagarina, N., Lyskina, G., Fukazawa, R., Ogawa, S., Burns, J. C., Marsden, A. L., Kahn, A. M.
2017; 120 (4): 556-562
- **Gradual loading ameliorates maladaptation in computational simulations of vein graft growth and remodelling.** *Journal of the Royal Society, Interface*
Ramachandra, A. B., Humphrey, J. D., Marsden, A. L.
2017; 14 (130)
 - **Optimizing fluid-structure interaction systems with immersogeometric analysis and surrogate modeling: Application to a hydraulic arresting gear** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
Wu, M. C., Kamensky, D., Wang, C., Herrema, A. J., Xu, F., Pigazzini, M. S., Verma, A., Marsden, A. L., Bazilevs, Y., Hsu, M.
2017; 316: 668-693
 - **Patient-specific parameter estimation in single-ventricle lumped circulation models under uncertainty.** *International journal for numerical methods in biomedical engineering*
Schiavazzi, D. E., Baretta, A., Pennati, G., Hsia, T., Marsden, A. L.
2017; 33 (3)
 - **SimVascular: An Open Source Pipeline for Cardiovascular Simulation.** *Annals of biomedical engineering*
Updegrave, A., Wilson, N. M., Merkow, J., Lan, H., Marsden, A. L., Shadden, S. C.
2017; 45 (3): 525-541
 - **Superior performance of continuous over pulsatile flow ventricular assist devices in the single ventricle circulation: A computational study.** *Journal of biomechanics*
Schmidt, T., Rosenthal, D., Reinhartz, O., Riemer, K., He, F., Hsia, T., Marsden, A., Kung, E.
2017; 52: 48-54
 - **A generalized multi-resolution expansion for uncertainty propagation with application to cardiovascular modeling** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
Schiavazzi, D. E., Doostan, A., Iaccarino, G., Marsden, A. L.
2017; 314: 196-221
 - **Looks Do Matter! Aortic Arch Shape After Hypoplastic Left Heart Syndrome Palliation Correlates With Cavopulmonary Outcomes** *ANNALS OF THORACIC SURGERY*
Bruse, J. L., Cervi, E., McLeod, K., Biglino, G., Sermesant, M., Pennec, X., Taylor, A. M., Schievano, S., Hsia, T., MOCHA Collaborative Grp
2017; 103 (2): 645-654
 - **Special Issue on Biological Systems Dedicated to William S. Klug** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
Barbone, P., Budyn, E., Tepole, A., De, S., Ennis, D., Garikipati, K., Gerbeau, J., Gomez, H., Goriely, A., Healey, T., Hughes, T., Kuhl, E., Marsden, et al
2017; 314: 1-2
 - **A generalized multi-resolution expansion for uncertainty propagation with application to cardiovascular modeling.** *Computer methods in applied mechanics and engineering*
Schiavazzi, D. E., Doostan, A., Iaccarino, G., Marsden, A. L.
2017; 314: 196-221
 - **How successful is successful? Aortic arch shape after successful aortic coarctation repair correlates with left ventricular function** *JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY*
Brusc, J. L., Khushnood, A., McLeod, K., Biglino, G., Sermesant, M., Pennec, X., Taylor, A. M., Hsia, T., Schievano, S., Khambadkone, S., De Leval, M., Bove, E., Dorfman, et al
2017; 153 (2): 418-427
 - **Automated tuning for parameter identification and uncertainty quantification in multi-scale coronary simulations** *COMPUTERS & FLUIDS*
Tran, J. S., Schiavazzi, D. E., Ramachandra, A. B., Kahn, A. M., Marsden, A. L.
2017; 142: 128-138
 - **Computational simulation of postoperative pulmonary flow distribution in Alagille patients with peripheral pulmonary artery stenosis** *Computational simulation of postoperative pulmonary flow distribution in Alagille patients with peripheral pulmonary artery stenosis*
Yang, W., Feinstein, J., Marsden, A., Vignon-Clementel, I.
2017; 00: 1-10
 - **SimVascular as an Instructional Tool in the Classroom**

Goergen, C. J., Shadden, S. C., Marsden, A. L., IEEE
IEEE.2017

- **A method to quantify mechanobiologic forces during zebrafish cardiac development using 4-D light sheet imaging and computational modeling.** *PLoS computational biology*
Vedula, V. n., Lee, J. n., Xu, H. n., Kuo, C. J., Hsiai, T. K., Marsden, A. L.
2017; 13 (10): e1005828
- **Computed Tomography Fractional Flow Reserve Can Identify Culprit Lesions in Aortoiliac Occlusive Disease Using Minimally Invasive Techniques** *ANNALS OF VASCULAR SURGERY*
Ward, E. P., Shiavazzi, D., Sood, D., Marsden, A., Lane, J., Owens, E., Barleben, A.
2017; 38: 151-157
- **Assessment of Coronary Artery Aneurysms Caused By Kawasaki Disease Using Transluminal Attenuation Gradient Analysis of CT Angiograms** *Assessment of Coronary Artery Aneurysms Caused By Kawasaki Disease Using Transluminal Attenuation Gradient Analysis of CT Angiograms*
Grande Gutierrez, N., Shirinsky, O., Gagarina, N., Lyskina, G., Fukazawa, R., Ogawa, S., Burns, J., Marsden, A., Kahn, A.
2017; 120 (4): 556-62
- **Atlas-Based Ventricular Shape Analysis for Understanding Congenital Heart Disease.** *Progress in pediatric cardiology*
Farrar, G., Suinesiaputra, A., Gilbert, K., Perry, J. C., Hegde, S., Marsden, A., Young, A. A., Omens, J. H., McCulloch, A. D.
2016; 43: 61-69
- **Right Ventricular Stroke Work Correlates With Outcomes in Pediatric Pulmonary Arterial Hypertension (PAH) Patients** *Quality of Care and Outcomes Research Scientific Sessions*
Yang, W., Marsden, A. L., Ogawa, M. T., Phillips, K. K., Rabinovitch, M., Feinstein, J. A.
LIPPINCOTT WILLIAMS & WILKINS.2016
- **Computed Tomography Fractional Flow Reserve Can Identify Culprit Lesions in Aortoiliac Occlusive Disease Using Minimally Invasive Techniques.** *Annals of vascular surgery*
Ward, E. P., Shiavazzi, D., Sood, D., Marsden, A., Lane, J., Owens, E., Barleben, A.
2016
- **Patient-Specific Simulations Reveal Significant Differences in Mechanical Stimuli in Venous and Arterial Coronary Grafts.** *Journal of cardiovascular translational research*
Ramachandra, A. B., Kahn, A. M., Marsden, A. L.
2016; 9 (4): 279-290
- **On a sparse pressure-flow rate condensation of rigid circulation models.** *Journal of biomechanics*
Schiavazzi, D. E., Hsia, T. Y., Marsden, A. L.
2016; 49 (11): 2174-2186
- **A statistical shape modelling framework to extract 3D shape biomarkers from medical imaging data: assessing arch morphology of repaired coarctation of the aorta** *BMC MEDICAL IMAGING*
Bruse, J. L., McLeod, K., Biglino, G., Ntsinjana, H. N., Capelli, C., Hsia, T., Sermesant, M., Pennec, X., Taylor, A. M., Schievano, S., Modeling Congenital Hearts Allianc
2016; 16: 40
- **Uncertainty quantification in virtual surgery hemodynamics predictions for single ventricle palliation** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN BIOMEDICAL ENGINEERING*
Schiavazzi, D. E., Arbia, G., Baker, C., Hlavacek, A. M., Hsia, T. Y., Marsden, A. L., Vignon-Clementel, I. E.
2016; 32 (3)
- **Multiscale modelling of single-ventricle hearts for clinical decision support: a Leducq Transatlantic Network of Excellence** *EUROPEAN JOURNAL OF CARDIO-THORACIC SURGERY*
Hsia, T., Figliola, R., Modeling Congenital Hearts Allianc
2016; 49 (2): 365-368
- **Respiration Increases Ventricular Filling at Rest and Exercise via Pulmonary Compliance: A Clinical and Computational Modeling Study**
Kung, E., Van De Bruaene, A., Claessen, G., La Gerche, A., Marsden, A., De Meester, P., Devroe, S., Bogaert, J., Claus, P., Heidbuchel, H., Budts, W., Gewillig, M.
LIPPINCOTT WILLIAMS & WILKINS.2015

- **Assessment of Coronary Artery Aneurysms Caused by Kawasaki Disease Using Transluminal Attenuation Gradient Analysis of Coronary CT Angiograms**
Gutierrez, N., Shirinsky, O., Gagarina, N. V., Lyskina, G. A., Fukazawa, R., Ogawa, S., Burns, J. C., Marsden, A. L., Kahn, A. M.
LIPPINCOTT WILLIAMS & WILKINS.2015
- **Computational modeling and engineering in pediatric and congenital heart disease.** *Current opinion in pediatrics*
Marsden, A. L., Feinstein, J. A.
2015; 27 (5): 587-596
- **In Vitro Assessment of the Assisted Bidirectional Glenn Procedure for Stage One Single Ventricle Repair.** *Cardiovascular engineering and technology*
Zhou, J., Esmaily-Moghadam, M., Conover, T. A., Hsia, T., Marsden, A. L., Figliola, R. S.
2015; 6 (3): 256-267
- **Integration of Clinical Data Collected at Different Times for Virtual Surgery in Single Ventricle Patients: A Case Study** *ANNALS OF BIOMEDICAL ENGINEERING*
Corsini, C., Baker, C., Baretta, A., Biglino, G., Hlavacek, A. M., Hsia, T., Kung, E., Marsden, A., Migliavacca, F., Vignon-Clementel, I., Pennati, G.
2015; 43 (6): 1310-1320
- **Computational Modeling of Pathophysiologic Responses to Exercise in Fontan Patients** *ANNALS OF BIOMEDICAL ENGINEERING*
Kung, E., Perry, J. C., Davis, C., Migliavacca, F., Pennati, G., Giardini, A., Hsia, T., Marsden, A.
2015; 43 (6): 1335-1347
- **Multiscale Modeling of Cardiovascular Flows for Clinical Decision Support** *APPLIED MECHANICS REVIEWS*
Marsden, A. L., Esmaily-Moghadam, M.
2015; 67 (3)
- **Thrombotic Risk Assessment in Kawasaki Disease Patients with Coronary Artery Aneurysms using Transluminal Attenuation Gradient Analysis**
Gutierrez, N., Kahn, A. M., Shirinsky, O., Lyskina, G. A., Fukazawa, R., Ogawa, S., Burns, J. C., Marsden, A. L.
LIPPINCOTT WILLIAMS & WILKINS.2015
- **Thrombotic Risk Assessment in Kawasaki Disease Patients with Coronary Artery Aneurysms using Transluminal Attenuation Gradient Analysis**
Gutierrez, N., Kahn, A. M., Shirinsky, O., Lyskina, G. A., Fukazawa, R., Ogawa, S., Burns, J. C., Marsden, A. L.
LIPPINCOTT WILLIAMS & WILKINS.2015
- **Distribution of aerosolized particles in healthy and emphysematous rat lungs: Comparison between experimental and numerical studies** *JOURNAL OF BIOMECHANICS*
Oakes, J. M., Marsden, A. L., Grandmont, C., Darquenne, C., Vignon-Clementel, I. E.
2015; 48 (6): 1147-1157
- **A bi-partitioned iterative algorithm for solving linear systems arising from incompressible flow problems** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
Esmaily-Moghadam, M., Bazilevs, Y., Marsden, A. L.
2015; 286: 40-62
- **Does TCPC power loss really affect exercise capacity? Reply** *HEART*
Khiabani, R. H., Whitehead, K. K., Han, D., Restrepo, M., Tang, E., Bethel, J., Paridon, S. M., Fogel, M. A., Yoganathan, A. P.
2015; 101 (7): 575-76
- **THE ASSISTED BIDIRECTIONAL GLENN: AN IN VITRO AND IN SILICO STUDY OF A SURGICAL APPROACH FOR FIRST STAGE SINGLE VENTRICLE HEART PALLIATION**
Figliola, R., Esmaily-Moghadam, M., Zhou, J., Hsia, T., Marsden, A.
ELSEVIER SCIENCE INC.2015: A518
- **Hemodynamic effects of left pulmonary artery stenosis after superior cavopulmonary connection: A patient-specific multiscale modeling study** *JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY*
Schiavazzi, D. E., Kung, E. O., Marsden, A. L., Baker, C., Pennati, G., Hsia, T., Hlavacek, A., Dorfman, A. L.
2015; 149 (3): 689-?
- **Computational Simulation of the Adaptive Capacity of Vein Grafts in Response to Increased Pressure** *JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME*
Ramachandra, A. B., Sankaran, S., Humphrey, J. D., Marsden, A. L.

2015; 137 (3)

- **Simulations Reveal Adverse Hemodynamics in Patients With Multiple Systemic to Pulmonary Shunts** *JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME*
Esmaily-Moghadam, M., Murtuza, B., Hsia, T., Marsden, A.
2015; 137 (3)
- **The assisted bidirectional Glenn: A novel surgical approach for first-stage single-ventricle heart palliation** *JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY*
Esmaily-Moghadam, M., Hsia, T., Marsden, A. L.
2015; 149 (3): 699-705
- **Flow simulations and validation for the first cohort of patients undergoing the Y-graft Fontan procedure** *JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY*
Yang, W., Chan, F. P., Reddy, V. M., Marsden, A. L., Feinstein, J. A.
2015; 149 (1): 247-255
- **Structural Edge Detection for Cardiovascular Modeling**
Merkow, J., Tu, Z., Kriegman, D., Marsden, A., Navab, N., Hornegger, J., Wells, W. M., Frangi, A. F.
SPRINGER INT PUBLISHING AG.2015: 735-42
- **Creating Shape Templates for Patient Specific Biventricular Modeling in Congenital Heart Disease**
Gilbert, K., Farrar, G., Cowan, B. R., Suinesiaputra, A., Occlshaw, C., Pontre, B., Perry, J., Hegde, S., Marsden, A., Omens, J., McCulloch, A., Young, A. A., IEEE
IEEE.2015: 679-82
- **Does TCPC power loss really affect exercise capacity?** *Heart (British Cardiac Society)*
Kung, E. n., Marsden, A. n., Baker, C. n., Giardini, A. n., Figliola, R. n., Hsia, T. Y.
2015; 101 (7): 575
- **Effect of respiration on cardiac filling at rest and during exercise in Fontan patients: A clinical and computational modeling study.** *International journal of cardiology. Heart & vasculature*
Van De Bruaene, A. n., Claessen, G. n., La Gerche, A. n., Kung, E. n., Marsden, A. n., De Meester, P. n., Devroe, S. n., Bogaert, J. n., Claus, P. n., Heidbuchel, H. n., Budts, W. n., Gewillig, M. n.
2015; 9: 100-108
- **Impact of data distribution on the parallel performance of iterative linear solvers with emphasis on CFD of incompressible flows** *COMPUTATIONAL MECHANICS*
Esmaily-Moghadam, M., Bazilevs, Y., Marsden, A. L.
2015; 55 (1): 93-103
- **Technical feasibility and intermediate outcomes of using a handcrafted, area-preserving, bifurcated Y-graft modification of the Fontan procedure** *JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY*
Martin, M. H., Feinstein, J. A., Chan, F. P., Marsden, A. L., Yang, W., Reddy, V. M.
2015; 149 (1): 239-U381
- **Technical feasibility and intermediate outcomes of using a handcrafted, area-preserving, bifurcated Y-graft modification of the Fontan procedure.** *journal of thoracic and cardiovascular surgery*
Martin, M. H., Feinstein, J. A., Chan, F. P., Marsden, A. L., Yang, W., Reddy, V. M.
2015; 149 (1): 239-45 e1
- **Novel 4-Dimensional Optical Technique to Elucidate Hemodynamic Shear Forces and Initiation of Trabeculation During Cardiac Morphogenesis**
Lee, J., Fei, P., Jen, N., Beebe, T., Ho, C., Marsden, A., Chi, N., Hsiai, T.
LIPPINCOTT WILLIAMS & WILKINS.2014
- **High Death and Re-Intervention Rate in Neonatal Modified Blalock-Taussig Shunts With Concomitant Patent Ductus Arteriosus: Mechanistic Insights Into Competitive Flow and Pulmonary Overcirculation**
Murtuza, B., Moghadam, M., Marsden, A.
LIPPINCOTT WILLIAMS & WILKINS.2014
- **In-vitro and Computational Study of the Assisted Bidirectional Glenn Procedure for Initial Palliation of Single Ventricle Physiology**
Esmaily-Moghadam, M., Zhou, J., Hsia, T., Figliola, R., Marsden, A.

LIPPINCOTT WILLIAMS & WILKINS.2014

- **ST and ALE-VMS methods for patient-specific cardiovascular fluid mechanics modeling** *MATHEMATICAL MODELS & METHODS IN APPLIED SCIENCES*
Takizawa, K., Bazilevs, Y., Tezduyar, T. E., Long, C. C., Marsden, A. L., Schjodt, K.
2014; 24 (12)
- **Thrombotic risk stratification using computational modeling in patients with coronary artery aneurysms following Kawasaki disease** *BIOMECHANICS AND MODELING IN MECHANOBIOLOGY*
Sengupta, D., Kahn, A. M., Kung, E., Moghadam, M. E., Shirinsky, O., Lyskina, G. A., Burns, J. C., Marsden, A. L.
2014; 13 (6): 1261-1276
- **Shape optimization of pulsatile ventricular assist devices using FSI to minimize thrombotic risk** *COMPUTATIONAL MECHANICS*
Long, C. C., Marsden, A. L., Bazilevs, Y.
2014; 54 (4): 921-932
- **A Simulation Protocol for Exercise Physiology in Fontan Patients Using a Closed Loop Lumped-Parameter Model (vol 136, 081007, 2014)** *JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME*
Kung, E., Pennati, G., Migliavacca, F., Hsia, T., Figliola, R., Marsden, A., Giardini, A.
2014; 136 (10)
- **Computation of residence time in the simulation of pulsatile ventricular assist devices** *COMPUTATIONAL MECHANICS*
Long, C. C., Esmaily-Moghadam, M., Marsden, A. L., Bazilevs, Y.
2014; 54 (4): 911-919
- **USNCTAM perspectives on mechanics in medicine** *JOURNAL OF THE ROYAL SOCIETY INTERFACE*
Bao, G., Bazilevs, Y., Chung, J., Decuzzi, P., Espinosa, H. D., Ferrari, M., Gao, H., Hossain, S. S., Hughes, T. J., Kamm, R. D., Liu, W. K., Marsden, A., Schrefler, et al
2014; 11 (97)
- **A Simulation Protocol for Exercise Physiology in Fontan Patients Using a Closed Loop Lumped-Parameter Model** *JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME*
Kung, E., Pennati, G., Migliavacca, F., Hsia, T., Figliola, R., Marsden, A., Giardini, A.
2014; 136 (8)
- **In Vitro Validation of Patient-Specific Hemodynamic Simulations in Coronary Aneurysms Caused by Kawasaki Disease.** *Cardiovascular engineering and technology*
Kung, E., Kahn, A. M., Burns, J. C., Marsden, A.
2014; 5 (2): 189-201
- **In Vitro Validation of Patient-Specific Hemodynamic Simulations in Coronary Aneurysms Caused by Kawasaki Disease** *CARDIOVASCULAR ENGINEERING AND TECHNOLOGY*
Kung, E., Kahn, A. M., Burns, J. C., Marsden, A.
2014; 5 (2): 189-201
- **Computational models of aortic coarctation in hypoplastic left heart syndrome: Considerations on validation of a detailed 3D model** *INTERNATIONAL JOURNAL OF ARTIFICIAL ORGANS*
Biglino, G., Corsini, C., Schievano, S., Dubini, G., Giardini, A., Hsia, T., Pennati, G., Taylor, A. M., MOCHA Collaborative Grp
2014; 37 (5): 371-381
- **Airflow and Particle Deposition Simulations in Health and Emphysema: From In Vivo to In Silico Animal Experiments** *ANNALS OF BIOMEDICAL ENGINEERING*
Oakes, J. M., Marsden, A. L., Grandmont, C., Shadden, S. C., Darquenne, C., Vignon-Clementel, I. E.
2014; 42 (4): 899-914
- **Recent advances in computational methodology for simulation of mechanical circulatory assist devices** *WILEY INTERDISCIPLINARY REVIEWS-SYSTEMS BIOLOGY AND MEDICINE*
Marsden, A. L., Bazilevs, Y., Long, C. C., Behr, M.
2014; 6 (2): 169-188
- **Optimization in Cardiovascular Modeling** *ANNUAL REVIEW OF FLUID MECHANICS, VOL 46*
Marsden, A. L.

2014; 46: 519-546

- **Patient-specific hemodynamic simulations in a group of patients with coronary artery aneurysms caused by Kawasaki Disease**
Sengupta, D., Burns, J. C., Kahn, A., Marsden, A. L., ASME
AMER SOC MECHANICAL ENGINEERS.2014
- **AN EFFICIENT PRECONDITIONER FOR LINEAR SYSTEM SOLUTION IN MULTI-DOMAIN MODELING OF THE CIRCULATORY SYSTEM**
Moghadam, M., Bazilevs, Y., Hsia, T., Marsden, A., ASME
AMER SOC MECHANICAL ENGINEERS.2014
- **AN AUTOMATED SIMULATION PROTOCOL FOR EXERCISE PHYSIOLOGY IN FONTAN PATIENTS USING A CLOSED-LOOP LUMPED-PARAMETER MODEL**
Kung, E., Giardini, A., Migliavacca, F., Pennati, G., Hsia, T., Marsden, A., ASME
AMER SOC MECHANICAL ENGINEERS.2014
- **GROWTH AND REMODELING OF VEIN GRAFT IN AN ARTERIAL ENVIRONMENT: PARAMETER ESTIMATION AND SENSITIVITY ANALYSIS**
Ramachandra, A. B., Sankaran, S., Humphrey, J. D., Marsden, A. L., ASME
AMER SOC MECHANICAL ENGINEERS.2014
- **A HEMI FONTAN OPERATION PERFORMED BY AN ENGINEER: CONSIDERATIONS ON VIRTUAL SURGERY**
Biglino, G., Kung, E., Dorfman, A., Taylor, A. M., Bove, E., Marsden, A., Hsia, T., Schievano, S., ASME
AMER SOC MECHANICAL ENGINEERS.2014
- **A PUBLIC REPOSITORY OF IMAGE-BASED COMPUTATIONAL MODELS AND PATIENT-SPECIFIC BLOOD FLOW SIMULATION RESULTS**
Wilson, N. M., Ortiz, A. K., Johnson, A. B., Feinstein, J. A., LaDisa, J. F., Marsden, A., ASME
AMER SOC MECHANICAL ENGINEERS.2014
- **An integrated approach to patient-specific predictive modeling for single ventricle heart palliation** *COMPUTER METHODS IN BIOMECHANICS AND BIOMEDICAL ENGINEERING*
Corsini, C., Baker, C., Kung, E., Schievano, S., Arbia, G., Baretta, A., Biglino, G., Migliavacca, F., Dubini, G., Pennati, G., Marsden, A., Vignon-Clementel, I., Taylor, et al
2014; 17 (14): 1572-1589
- **Numerical blood flow simulation in surgical corrections: what do we need for an accurate analysis?** *JOURNAL OF SURGICAL RESEARCH*
Arbia, G., Corsini, C., Moghadam, M. E., Marsden, A. L., Migliavacca, F., Pennati, G., Hsia, T., Vignon-Clementel, I. E.
2014; 186 (1): 44-55
- **A non-discrete method for computation of residence time in fluid mechanics simulations** *PHYSICS OF FLUIDS*
Esmaily-Moghadam, M., Hsia, T., Marsden, A. L.
2013; 25 (11)
- **Fluid-structure interaction simulation of pulsatile ventricular assist devices** *COMPUTATIONAL MECHANICS*
Long, C. C., Marsden, A. L., Bazilevs, Y.
2013; 52 (5): 971-981
- **A new preconditioning technique for implicitly coupled multidomain simulations with applications to hemodynamics** *COMPUTATIONAL MECHANICS*
Esmaily-Moghadam, M., Bazilevs, Y., Marsden, A. L.
2013; 52 (5): 1141-1152
- **Simulation based planning of surgical interventions in pediatric cardiology** *PHYSICS OF FLUIDS*
Marsden, A. L.
2013; 25 (10)
- **Simulation based planning of surgical interventions in pediatric cardiology.** *Physics of fluids (Woodbury, N.Y. : 1994)*
Marsden, A. L.
2013; 25 (10): 101303
- **Moving Domain Computational Fluid Dynamics to Interface with an Embryonic Model of Cardiac Morphogenesis** *PLOS ONE*
Lee, J., Moghadam, M. E., Kung, E., Cao, H., Beebe, T., Miller, Y., Roman, B. L., Lien, C., Chi, N. C., Marsden, A. L., Hsiai, T. K.
2013; 8 (8)

- **A modular numerical method for implicit 0D/3D coupling in cardiovascular finite element simulations** *JOURNAL OF COMPUTATIONAL PHYSICS*
Moghadam, M. E., Vignon-Clementel, I. E., Figliola, R., Marsden, A. L.
2013; 244: 63-79
- **Lagrangian analysis of hemodynamics data from FSI simulation** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN BIOMEDICAL ENGINEERING*
Duvernois, V., Marsden, A. L., Shadden, S. C.
2013; 29 (4): 445-461
- **SPATIAL DISTRIBUTION OF AEROSOLS IN HEALTHY RAT LUNGS: FINDINGS FROM NUMERICAL AND EXPERIMENTAL MODELS**
Oakes, J. M., Darquenne, C., Grandmont, C., Scadeng, M., Breen, E., Vignon-Clementel, I., Marsden, A. L.
MARY ANN LIEBERT INC.2013: A35
- **An efficient framework for optimization and parameter sensitivity analysis in arterial growth and remodeling computations** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
Sankaran, S., Humphrey, J. D., Marsden, A. L.
2013; 256: 200-210
- **Variability of computational fluid dynamics solutions for pressure and flow in a giant aneurysm: the ASME 2012 Summer Bioengineering Conference CFD Challenge.** *Journal of biomechanical engineering*
Steinman, D. A., Hoi, Y., Fahy, P., Morris, L., Walsh, M. T., Aristokleous, N., Anayiotos, A. S., Papaharilaou, Y., Arzani, A., Shadden, S. C., Berg, P., Janiga, G., Bols, et al
2013; 135 (2): 021016-?
- **Predictive modeling of the virtual Hemi-Fontan operation for second stage single ventricle palliation: Two patient-specific cases** *JOURNAL OF BIOMECHANICS*
Kung, E., Baretta, A., Baker, C., Arbia, G., Biglino, G., Corsini, C., Schievano, S., Vignon-Clementel, I. E., Dubini, G., Pennati, G., Taylor, A., Dorfman, A., Hlavacek, et al
2013; 46 (2): 423-429
- **Optimization of a Y-Graft Design for Improved Hepatic Flow Distribution in the Fontan Circulation** *JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME*
Yang, W., Feinstein, J. A., Shadden, S. C., Vignon-Clementel, I. E., Marsden, A. L.
2013; 135 (1)
- **Patient-Specific Multiscale Modeling of Blood Flow for Coronary Artery Bypass Graft Surgery** *ANNALS OF BIOMEDICAL ENGINEERING*
Sankaran, S., Moghadam, M. E., Kahn, A. M., Tseng, E. E., Guccione, J. M., Marsden, A. L.
2012; 40 (10): 2228-2242
- **Respiratory effects on hemodynamics in patient-specific CFD models of the Fontan circulation under exercise conditions** *EUROPEAN JOURNAL OF MECHANICS B-FLUIDS*
Baretta, A., Corsini, C., Marsden, A. L., Vignon-Clementel, I. E., Hsia, T., Dubini, G., Migliavacca, F., Pennati, G.
2012; 35: 61-69
- **Image-based modeling of hemodynamics in coronary artery aneurysms caused by Kawasaki disease** *BIOMECHANICS AND MODELING IN MECHANOBIOLOGY*
Sengupta, D., Kahn, A. M., Burns, J. C., Sankaran, S., Shadden, S. C., Marsden, A. L.
2012; 11 (6): 915-932
- **Identification of Hemodynamically Optimal Coronary Stent Designs Based on Vessel Caliber** *IEEE TRANSACTIONS ON BIOMEDICAL ENGINEERING*
Gundert, T. J., Marsden, A. L., Yang, W., Marks, D. S., LaDisa, J. F.
2012; 59 (7): 1992-2002
- **Rat airway morphometry measured from in situ MRI-based geometric models** *JOURNAL OF APPLIED PHYSIOLOGY*
Oakes, J. M., Scadeng, M., Breen, E. C., Marsden, A. L., Darquenne, C.
2012; 112 (11): 1921-1931
- **Fluid-structure interaction simulations of the Fontan procedure using variable wall properties** *INTERNATIONAL JOURNAL FOR NUMERICAL METHODS IN BIOMEDICAL ENGINEERING*
Long, C. C., Hsu, M., Bazilevs, Y., Feinstein, J. A., Marsden, A. L.
2012; 28 (5): 513-527

- **Optimization of Shunt Placement for the Norwood Surgery Using Multi-Domain Modeling** *JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME*
Moghadam, M. E., Migliavacca, F., Vignon-Clementel, I. E., Hsia, T., Marsden, A. L.
2012; 134 (5)
- **Hepatic blood flow distribution and performance in conventional and novel Y-graft Fontan geometries: A case series computational fluid dynamics study** *JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY*
Yang, W., Vignon-Clementel, I. E., Troianowski, G., Reddy, V. M., Feinstein, J. A., Marsden, A. L.
2012; 143 (5): 1086-1097
- **Hypoplastic Left Heart Syndrome Current Considerations and Expectations** *JOURNAL OF THE AMERICAN COLLEGE OF CARDIOLOGY*
Feinstein, J. A., Benson, D. W., Dubin, A. M., Cohen, M. S., Macey, D. M., Mahle, W. T., Pahl, E., Villafane, J., Bhatt, A. B., Peng, L. F., Johnson, B. A., Marsden, A. L., Daniels, et al
2012; 59 (1): S1-S42
- **COMPARISON OF CLINICAL AND SIMULATION RESULTS FOR THE STANFORD Y-GRAFT FONTAN PILOT TRIAL** *ASME Summer Bioengineering Conference (SBC)*
Yang, W., Feinstein, J. A., Reddy, V. M., Chan, F. P., Marsden, A. L.
AMER SOC MECHANICAL ENGINEERS.2012: 463-464
- **In Vitro Study of the Norwood Palliation: A Patient-Specific Mock Circulatory System** *ASAIO JOURNAL*
Biglino, G., Giardini, A., Baker, C., Figliola, R. S., Hsia, T., Taylor, A. M., Schievano, S., MOCHA Collaborative Grp
2012; 58 (1): 25-31
- **Toward a Computational Steering Framework for Large-Scale Composite Structures Based on Continually and Dynamically Injected Sensor Data**
Bazilevs, Y., Marsden, A. L., di Scalea, F., Majumdar, A., Tatineni, M., Ali, H., Shi, Y., Khazanchi, D., Lees, M., VanAlbada, G. D., Dongarra, J., Sloot, P. M.
ELSEVIER SCIENCE BV.2012: 1149-1158
- **CFD CHALLENGE: CEREBRAL ANEURYSM SIMULATIONS USING AN IN-HOUSE FINITE ELEMENT SOLVER**
Moghadam, M., Wilson, N., Bazilevs, Y., Marsden, A., ASME
AMER SOC MECHANICAL ENGINEERS.2012: 159-160
- **STUDY OF MULTIPLE SYSTEMIC-TO-PULMONARY SHUNTS IN SINGLE VENTRICLE HEARTS**
Moghadam, M., Hsia, T., Murtuza, B., Marsden, A., ASME
AMER SOC MECHANICAL ENGINEERS.2012: 599-600
- **MULTISCALE MODEL OF AIRFLOW IN HEALTHY AND EMPHYSEMA RAT LUNGS**
Oakes, J. M., Marsden, A. L., Grandmont, C., Darquenne, C., Vignon-Clementel, I. E., ASME
AMER SOC MECHANICAL ENGINEERS.2012: 1263-1264
- **A PUBLIC REPOSITORY OF IMAGE-BASED COMPUTATIONAL MODELS FOR PATIENT-SPECIFIC BLOOD FLOW SIMULATION** *ASME Summer Bioengineering Conference (SBC)*
Wilson, N. M., Ortiz, A. K., Johnson, A. B., Arko, F. R., Feinstein, J. A., LaDisa, J. F., Marsden, A.
AMER SOC MECHANICAL ENGINEERS.2012: 969-970
- **Immersive Volume Rendering of Blood Vessels**
Long, G., Kim, H., Marsden, A., Bazilevs, Y., Schulze, J. P., McDowall, I. E., Dolinsky, M.
SPIE-INT SOC OPTICAL ENGINEERING.2012
- **Optimization of Computationally Expensive Simulations with Gaussian Processes and Parameter Uncertainty: Application to Cardiovascular Surgery**
Xie, J., Frazier, P. I., Sankaran, S., Marsden, A., Elmohamed, S., IEEE
IEEE.2012: 406-13
- **Optimization of Cardiovascular Stent Design Using Computational Fluid Dynamics** *JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME*
Gundert, T. J., Marsden, A. L., Yang, W., LaDisa, J. F.
2012; 134 (1)
- **Virtual surgeries in patients with congenital heart disease: a multi-scale modelling test case** *PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY A-MATHEMATICAL PHYSICAL AND ENGINEERING SCIENCES*
BARETTA, A., Corsini, C., Yang, W., Vignon-Clementel, I. E., Marsden, A. L., Feinstein, J. A., Hsia, T., Dubini, G., Migliavacca, F., Pennati, G.

2011; 369 (1954): 4316-4330

- **A comparison of outlet boundary treatments for prevention of backflow divergence with relevance to blood flow simulations** *COMPUTATIONAL MECHANICS*
Moghadam, M. E., Bazilevs, Y., Hsia, T., Vignon-Clementel, I. E., Marsden, A. L.
2011; 48 (3): 277-291
- **Towards inverse modeling of turbidity currents: The inverse lock-exchange problem** *COMPUTERS & GEOSCIENCES*
Lesshafft, L., Meiburg, E., Kneller, B., Marsden, A.
2011; 37 (4): 521-529
- **A Stochastic Collocation Method for Uncertainty Quantification and Propagation in Cardiovascular Simulations** *JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME*
Sankaran, S., Marsden, A. L.
2011; 133 (3)
- **The impact of uncertainty on shape optimization of idealized bypass graft models in unsteady flow** *PHYSICS OF FLUIDS*
Sankaran, S., Marsden, A. L.
2010; 22 (12)
- **A primer on computational simulation in congenital heart disease for the clinician** *PROGRESS IN PEDIATRIC CARDIOLOGY*
Vignon-Clementel, I. E., Marsden, A. L., Feinstein, J. A.
2010; 30 (1-2): 3-13
- **Introduction** *PROGRESS IN PEDIATRIC CARDIOLOGY*
Feinstein, J. A., Marsden, A.
2010; 30 (1-2): 1
- **Imaging and patient-specific simulations for the Fontan surgery: current methodologies and clinical applications.** *Progress in pediatric cardiology*
de Zélicourt, D. A., Marsden, A., Fogel, M. A., Yoganathan, A. P.
2010; 30 (1-2): 31-44
- **A method for stochastic constrained optimization using derivative-free surrogate pattern search and collocation** *JOURNAL OF COMPUTATIONAL PHYSICS*
Sankaran, S., Audet, C., Marsden, A. L.
2010; 229 (12): 4664-4682
- **A New Multiparameter Approach to Computational Simulation for Fontan Assessment and Redesign** *CONGENITAL HEART DISEASE*
Marsden, A. L., Reddy, V. M., Shadden, S. C., Chan, F. P., Taylor, C. A., Feinstein, J. A.
2010; 5 (2): 104-117
- **Constrained optimization of an idealized Y-shaped baffle for the Fontan surgery at rest and exercise** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
Yang, W., Feinstein, J. A., Marsden, A. L.
2010; 199 (33-36): 2135-2149
- **Patient-specific hemodynamic simulations in coronary artery aneurysms caused by Kawasaki Disease**
Sengupta, D., Burns, J. C., Kahn, A., Marsden, A. L., ASME
AMER SOC MECHANICAL ENGINEERS.2010: 575-576
- **A COMPUTATIONAL TECHNIQUE FOR ROBUST OPTIMIZATION OF CARDIOVASCULAR BYPASS GRAFT SURGERIES**
Sankaran, S., Marsden, A. L., ASME
AMER SOC MECHANICAL ENGINEERS.2010: 613-614
- **IMAGE-BASED MORPHOMETRY AND AIRFLOW SIMULATION IN RAT LUNGS**
Oakes, J. M., Marsden, A. L., Scadeng, M., Darquenne, C., ASME
AMER SOC MECHANICAL ENGINEERS.2010: 655-656
- **CFD SIMULATION OF FLOW MIXING IN THE VERTOBROBASILAR SYSTEM**
Bockman, M. D., Kansagra, A. P., Wong, E. C., Marsden, A. L., ASME
AMER SOC MECHANICAL ENGINEERS.2010: 679-680

- **VIRTUAL DESIGN FOR THE FONTAN PROCEDURE: FROM IDEALIZED TO PATIENT SPECIFIC MODELS USING CFD AND DERIVATIVE-FREE OPTIMIZATION** *12th ASME Summer Bioengineering Conference*
Yang, W., Troianowski, G., Birolleau, A., Vignon-Clementel, I., Feinstein, J. A., Marsden, A. L.
AMER SOC MECHANICAL ENGINEERS.2010: 425–426
- **A COMPUTATIONAL FRAMEWORK FOR OPTIMIZATION AND UNCERTAINTY QUANTIFICATION IN SURGICAL DESIGN FOR PEDIATRIC CARDIOLOGY** *12th ASME Summer Bioengineering Conference*
Marsden, A. L., Yang, W., Sankaran, S., Feinstein, J. A.
AMER SOC MECHANICAL ENGINEERS.2010: 249–250
- **Computational fluid-structure interaction: methods and application to a total cavopulmonary connection** *COMPUTATIONAL MECHANICS*
Bazilevs, Y., Hsu, M., Benson, D. J., Sankaran, S., Marsden, A. L.
2009; 45 (1): 77-89
- **Recent Advances in the Application of Computational Mechanics to the Diagnosis and Treatment of Cardiovascular Disease** *REVISTA ESPANOLA DE CARDIOLOGIA*
del Alamo, J. C., Marsden, A. L., Lasheras, J. C.
2009; 62 (7): 781–805
- **Evaluation of a novel Y-shaped extracardiac Fontan baffle using computational fluid dynamics** *JOURNAL OF THORACIC AND CARDIOVASCULAR SURGERY*
Marsden, A. L., Bernstein, A. J., Reddy, V. M., Shadden, S. C., Spilker, R. L., Chan, F. P., Taylor, C. A., Feinstein, J. A.
2009; 137 (2): 394-U187
- **OPTIMIZATION OF AN IDEALIZED Y-GRAFT FOR THE FONTAN PROCEDURE USING CFD AND A DERIVATIVE-FREE OPTIMIZATION ALGORITHM** *ASME Summer Bioengineering Conference*
Yang, W., Feinstein, J. A., Reddy, V. M., Marsden, A. L.
AMER SOC MECHANICAL ENGINEERS.2009: 449–450
- **A COMPUTATIONAL INVESTIGATION OF MURRAY'S LAW USING 3-D NAVIER STOKES SOLUTIONS AND DERIVATIVE FREE OPTIMIZATION**
Sengupta, D., Marsden, A. L., ASME
AMER SOC MECHANICAL ENGINEERS.2009: 473-474
- **A COMPUTATIONAL TECHNIQUE FOR UNCERTAINTY QUANTIFICATION AND ROBUST DESIGN IN CARDIOVASCULAR SYSTEMS** *ASME Summer Bioengineering Conference*
Sankaran, S., Feinstein, J. A., Marsden, A. L.
AMER SOC MECHANICAL ENGINEERS.2009: 17–18
- **Generation of optimal artificial neural networks using a pattern search algorithm: Application to approximation of chemical systems** *NEURAL COMPUTATION*
Ihme, M., Marsden, A. L., Pitsch, H.
2008; 20 (2): 573-601
- **A computational framework for derivative-free optimization of cardiovascular geometries** *COMPUTER METHODS IN APPLIED MECHANICS AND ENGINEERING*
Marsden, A. L., Feinstein, J. A., Taylor, C. A.
2008; 197 (21-24): 1890-1905
- **Large differences in efficiency among Fontan patients demonstrated in patient specific models of blood flow simulations** *80th Annual Scientific Session of the American-Heart-Association (AHA)*
Marsden, A. L., Bernstein, A. J., Spilker, R. L., Chan, F. P., Taylor, C. A., Feinstein, J. A.
LIPPINCOTT WILLIAMS & WILKINS.2007: 480–80
- **Trailing-edge noise reduction using derivative-free optimization and large-eddy simulation** *JOURNAL OF FLUID MECHANICS*
Marsden, A. L., Wang, M., Dennis, J. E., Moin, P.
2007; 572: 13-36
- **Effects of exercise and respiration on hemodynamic efficiency in CFD simulations of the total cavopulmonary connection** *ANNALS OF BIOMEDICAL ENGINEERING*
Marsden, A. L., Vignon-Clementel, I. E., Chan, F. P., Feinstein, J. A., Taylor, C. A.

2007; 35 (2): 250-263

- **Evaluation of hemodynamic efficiency in a new "Y-graft" design for the Fontan operation** *ASME Summer Bioengineering Conference*
Bernstein, A. J., Marsden, A. L., Spilker, R. L., Reddy, V. M., Taylor, C. A., Feinstein, J. A.
AMER SOC MECHANICAL ENGINEERS.2007: 473-474
- **Suppression of vortex-shedding noise via derivative-free shape optimization** *PHYSICS OF FLUIDS*
Marsden, A. L., Wang, M., Dennis, J. E., Moin, P.
2004; 16 (10): L83-L86
- **Optimal aeroacoustic shape design using the surrogate management framework** *OPTIMIZATION AND ENGINEERING*
Marsden, A. L., Wang, M., Dennis, J. E., Moin, P.
2004; 5 (2): 235-262
- **Construction of commutative filters for LES on unstructured meshes** *JOURNAL OF COMPUTATIONAL PHYSICS*
Marsden, A. L., Vasilyev, O. V., Moin, P.
2002; 175 (2): 584-603