Stanford

Alison Marsden

Associate Professor of Pediatrics (Cardiology) and of Bioengineering and, by courtesy, of Mechanical Engineering

Pediatrics - Cardiology

Curriculum Vitae available Online

CONTACT INFORMATION

- **administrator**

  Margaret Truong - Administrative Associate, Pediatrics (Cardiology)

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Bio

BIO

Alison Marsden is an associate 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, and is a fellow of the American Institute of Medical and Biological Engineers and the Society for Industrial and Applied Mathematics. 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 90 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. 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

- Associate Professor, Pediatrics - Cardiology
- Associate Professor, Bioengineering
- Member, Bio-X
- Member, Cardiovascular Institute
- Member, Maternal & Child Health Research Institute (MCHRI)

HONORS AND AWARDS

- 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

- 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)

PROGRAM AFFILIATIONS

- Institute for Computational and Mathematical Engineering (ICME)

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: http://web.stanford.edu/~amarsden/MarsdenLab/Home.html
- SimVascular Open Source Software Project: http://www.simvascular.org/

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

2018-19

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

2017-18

- Bioengineering Departmental Research Colloquium: BIOE 393 (Aut)
- Introduction to Numerical Methods for Engineering: CME 206, ME 300C (Spr)
- Seminar in Fluid Mechanics: ENGR 298 (Spr)

2016-17

- Bioengineering Departmental Research Colloquium: BIOE 393 (Aut, Win, Spr)
- Computational Modeling in the Cardiovascular System: BIOE 285, CME 285, ME 285 (Win)
- Introduction to Numerical Methods for Engineering: CME 206, ME 300C (Spr)

2015-16

- Computational Modeling in the Cardiovascular System: BIOE 285, CME 285 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Taylor Geisler

Postdoctoral Faculty Sponsor

Alexander Kaiser, Muhammad Owais Khan, Stephanie Lindsey, Ju Liu, Jongmin Seo, Vijay Vedula

Doctoral Dissertation Advisor (AC)

Suhaas Anbazhakan, Melody Dong, Casey Fleeter, Noelia Grande Gutierrez, Ingrid Lan, Gabriel Maher, Nicole Schiavone, Erica Schwarz, Aekaansh Verma

Doctoral (Program)

Mackenzie Carlson, Melody Dong

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

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

Publications

PUBLICATIONS

- **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

- **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

- **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

- **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: 402–28

- **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., Baek, K. I., Chen, C., Chen, J., Chou, M. I., Lam, J., Subhedar, S., Wang, J., Ding, Y., Chang, C. C., Lee, J., Demer, et al
  2019; 5

- **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

- **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

- **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)

- **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)

- **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

- **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): 241–50

- **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): 157–70

- **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 Re-Engineered Software Interface and Workflow for the Open-Source SimVascular Cardiovascular Modeling Package.** *Journal of biomechanical engineering*
  Lan, H., Updegrove, A., Wilson, N. M., Maher, G. D., Shadden, S. C., Marsden, A. L.
  2018; 140 (2)

- **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., Updegrove, A., Wilson, N., Maher, G., Shadden, S., Marsden, A.
  2018; 140 (2): 024501-024501-11

- **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

- **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*
  Updegrove, 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

- **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

- **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): 556–62

- **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

- **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., Lee, J., Xu, H., 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

- **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)
- **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)
- **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
- **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., Occleshaw, 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., Marsden, A., Baker, C., Giardini, A., Figliola, R., 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., Claessen, G., La Gerche, A., Kung, E., Marsden, A., De Meester, P., Devroe, S., Bogaert, J., Claus, P., Heidbuchel, H., Budts, W., Gewillig, M.
  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

- **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

- **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.
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