

Journal articles

Kashyap V; Gharleghi R; Li DD; McGrath-Cadell L; Graham RM; Ellis C; Webster M; Beier S, 2022, 'Accuracy of vascular tortuosity measures using computational modelling', *Scientific Reports*, vol. 12, pp. 865, <http://dx.doi.org/10.1038/s41598-022-04796-w>

Gharleghi R; Adikari D; Ellenberger K; Ooi SY; Ellis C; Chen CM; Gao R; He Y; Hussain R; Lee CY; Li J; Ma J; Nie Z; Oliveira B; Qi Y; Skandarani Y; Vilaça JL; Wang X; Yang S; Sowmya A; Beier S, 2022, 'Automated segmentation of normal and diseased coronary arteries – The ASOCA challenge', *Computerized Medical Imaging and Graphics*, vol. 97, pp. 102049, <http://dx.doi.org/10.1016/j.compmedimag.2022.102049>

Gharleghi R; Dessalles CA; Lal R; McCraith S; Sarathy K; Jepson N; Otton J; Barakat AI; Beier S, 2022, 'Correction to: 3D Printing for Cardiovascular Applications: From End-to-End Processes to Emerging Developments (Annals of Biomedical Engineering, (2021), 49, 7, (1598-1618), 10.1007/s10439-021-02784-1)', *Annals of Biomedical Engineering*, vol. 50, pp. 233, <http://dx.doi.org/10.1007/s10439-021-02894-w>

Shen C; Gharleghi R; Li DD; Stevens M; Dokos S; Beier S, 2021, 'Secondary flow in bifurcations – Important effects of curvature, bifurcation angle and stents', *Journal of Biomechanics*, vol. 129, pp. 110755, <http://dx.doi.org/10.1016/j.jbiomech.2021.110755>

Xue H; Saha SC; Beier S; Jepson N; Luo Z, 2021, 'Topological Optimization of Auxetic Coronary Stents Considering Hemodynamics', *Frontiers in Bioengineering and Biotechnology*, vol. 9, <http://dx.doi.org/10.3389/fbioe.2021.728914>

Gharleghi R; Wright H; Luvio V; Jepson N; Luo Z; Senthurnathan A; Babaei B; Prusty BG; Ray T; Beier S, 2021, 'A multi-objective optimization of stent geometries', *Journal of biomechanics*, vol. 125, pp. 110575, <http://dx.doi.org/10.1016/j.jbiomech.2021.110575>

Gharleghi R; Dessalles CA; Lal R; McCraith S; Sarathy K; Jepson N; Otton J; Barakat AI; Beier S, 2021, '3D Printing for Cardiovascular Applications: From End-to-End Processes to Emerging Developments', *Annals of Biomedical Engineering*, vol. 49, pp. 1598 - 1618, <http://dx.doi.org/10.1007/s10439-021-02784-1>

Otton J; Leong CN; Al Abed A; Alharbi Y; Beier S; Dokos S, 2021, 'TCT-410 Computational Flow Dynamic Simulation of Transcatheter Mitral Valve Implantation Indicates That Multiple Anatomical Factors Contribute to Postprocedural Outflow Tract Obstruction', *Journal of the American College of Cardiology*, vol. 78, pp. B168 - B168, <http://dx.doi.org/10.1016/j.jacc.2021.09.1263>

Xue H; Luo Z; Brown T; Beier S, 2020, 'Design of Self-Expanding Auxetic Stents Using Topology Optimization', *Frontiers in Bioengineering and Biotechnology*, vol. 8, <http://dx.doi.org/10.3389/fbioe.2020.00736>

Bautista F; Gharleghi R; Beier S, 2020, '353 In Vivo Like Coronary Phantoms With Disease and Anisotropic Behaviour', *Heart, Lung and Circulation*, vol. 29, pp. S193 - S193, <http://dx.doi.org/10.1016/j.hlc.2020.09.360>

Gharleghi R; Samarasinghe G; Sowmya A; Beier S, 2020, '377 Machine Learning to Predict Hemodynamic Risk in Left Main Bifurcations', *Heart, Lung and Circulation*, vol. 29, pp. S207 - S207, <http://dx.doi.org/10.1016/j.hlc.2020.09.384>

Senthurnathan A; Gharleghi R; Wright H; Liu J; Prusty G; Ray T; Beier S, 2020, '596 Assessment of Longitudinal Integrity of Stents Optimized for Haemodynamic Performance', *Heart, Lung and Circulation*, vol. 29, pp. S305 - S306, <http://dx.doi.org/10.1016/j.hlc.2020.09.603>

Senthurnathan A; Gharleghi R; Prusty G; Beier S, 2020, '614 Longitudinal Strength of Coronary Stents – A Validation Study', *Heart, Lung and Circulation*, vol. 29, pp. S314 - S314, <http://dx.doi.org/10.1016/j.hlc.2020.09.621>

Lal R; Cabanag M; Dominguez L; Ooi S; Beier S, 2020, '627 Towards Preoperative PCI Procedure Planning With Virtual Reality', *Heart, Lung and Circulation*, vol. 29, pp. S319 - S320, <http://dx.doi.org/10.1016/j.hlc.2020.09.634>

Beier S; Ormiston J; Webster M; Medrano P; Masoud-Ansari S; Cowan B, 2019, 'Coronary Artery Shape as a New Biomarker - Anatomical Features Linked to Adverse Haemodynamics', *Heart, Lung and Circulation*, vol. 28, pp. S245 - S245, <http://dx.doi.org/10.1016/j.hlc.2019.06.261>

Ormiston JO; Kassab GK; Finet GF; Chatzizisis YSC; Foin NF; Mickley TJM; Chiastra CC; Murasato YM; Hikichi TH; Wentzel JJW; Darremont OD; Iwasaki IK; Lefevre TL; Louvard YL; Beier S; Hojeibane HH; Netrvali AN; Wootton JW; Cowan BC; Webster MIW; Medrano PM; Stankovic GS, 2017, 'Bench Testing and Coronary Artery Bifurcations: A Consensus Document from the European Bifurcation Club.', *Eurointervention*, vol. 13, pp. e1794 - e1803, <http://dx.doi.org/10.4244/EIJ-D-17-00270>

Medrano-Gracia P; Ormiston J; Webster M; Beier S; Ellis C; Wang C; Smedby Ö; Young A; Cowan B, 2017, 'A Study of Coronary Bifurcation Shape in a Normal Population', *Journal of Cardiovascular Translational Research*, vol. 10, pp. 82 - 90, <http://dx.doi.org/10.1007/s12265-016-9720-2>

Beier S; Ormiston JA; Webster MW; Cater JE; Norris SE; Medrano-Gracia P; Young AA; Cowan BR, 2016, 'Dynamically scaled phantom phase contrast MRI compared to true-scale computational modeling of coronary artery flow', *Journal of Magnetic Resonance Imaging*, vol. 44, pp. 983 - 992, <http://dx.doi.org/10.1002/jmri.25240>

Medrano-Gracia P; Ormiston J; Webster M; Beier S; Young A; Ellis C; Wang C; Smedby Ö; Cowan B, 2016, 'A computational atlas of normal coronary artery anatomy', *EuroIntervention*, vol. 12, pp. 845 - 854, <http://dx.doi.org/10.4244/EIJV12I7A139>

Beier S; Ormiston J; Webster M; Cater J; Norris S; Medrano-Gracia P; Young A; Cowan B, 2016, 'Impact of bifurcation angle and other anatomical characteristics on blood flow - A computational study of non-stented and stented coronary arteries', *Journal of Biomechanics*, vol. 49, pp. 1570 - 1582, <http://dx.doi.org/10.1016/j.jbiomech.2016.03.038>

Beier S; Ormiston J; Webster M; Cater J; Norris S; Medrano-Gracia P; Young A; Cowan B, 2016, 'Hemodynamics in Idealized Stented Coronary Arteries: Important Stent Design Considerations', *Annals of Biomedical Engineering*, vol. 44, pp. 315 - 329, <http://dx.doi.org/10.1007/s10439-015-1387-3>

Beier S; Ormiston J; Webster M; Cater J; Norris S; Medrano-Gracia P; Young A; Cowan BR, 2016, 'A new method to quantify coronary flow conditions using dynamically scaled in vitro phase contrast magnetic resonance imaging', *Journal of Cardiovascular Magnetic Resonance*, vol. 18, pp. P103 - P103, <http://dx.doi.org/10.1186/1532-429x-18-s1-p103>

Medrano PM; Ormiston JO; Webster MW; Beier S; Ellis CE; Wang CW; Cowan BC; Young AY, 2015, 'A Statistical Model of the Main Bifurcation of the Left Coronary Artery using Coherent Point Drift', *International Conference on Medical Image Computing and Computer-Assisted*

Beier S; Ormiston JO; Webster MW; Cater JC; Norris SN; Medrano PM; Young AY; Cowan BC, 2015, 'Overcoming spatio-temporal limitations using dynamically scaled in vitro PC-MRI-A comparison to real scale CFD of idealised, stented and patient left main geometries', *International Conference on Medical Image Computing and Computer-Assisted*

Medrano ; Ormiston ; Webster ; Beier S; Ellis ; Wang CW; Cowan BC; Young AY, 2014, 'Construction of a coronary artery atlas from CT angiography', *International Conference on Medical Image Computing and Computer-Assisted*, vol. 17, pp. 513 - 520

Beier S; Ormiston J; Webster M; Cater J; Medrano-Gracia P; Young A; Cowan BR, 2014, 'Coronary artery bifurcation haemodynamics - comparison between phase contrast MRI and computational fluid dynamics', *Journal of Cardiovascular Magnetic Resonance*, vol. 16, pp. P224 - P224, <http://dx.doi.org/10.1186/1532-429x-16-s1-p224>

Beier S; Ormiston J; Webster M; Cater J; Medrano-Gracia P; Young A; Cowan B, 2013, 'Ex-Vivo Stented Coronary Artery Hemodynamics Using 4D Flow Measurements and Computational Flow Dynamics (CFD)', *Heart, Lung and Circulation*, vol. 22, pp. S40 - S41, <http://dx.doi.org/10.1016/j.hlc.2013.05.096>

Ormiston JA; Beier S; Cowan B; Webster MWI, 2012, 'Reply', *JACC: Cardiovascular Interventions*, vol. 5, pp. 362 - 363, <http://dx.doi.org/10.1016/j.jcin.2012.02.001>

Fortin H; Kandev N; Fafard M, 2012, 'FEM analysis of voltage drop in the anode connector induced by steel stub diameter reduction', *Finite Elements in Analysis and Design*, vol. 52, pp. 71 - 82, <http://dx.doi.org/10.1016/j.finel.2011.10.006>

Beier S; Chen JJJC; Fortin HF; Fafard MF, 2011, 'FEM analysis of the anode connection in aluminium reduction cells', *Journal of Light Metals*, pp. 979 - 984, <http://dx.doi.org/10.1002/9781118061992.ch167>

Book Chapters

Scanlon JS; Onuma OY; Serruys PS; Deitzel JD; Ormiston JO; Webber BW; Sathananthan J; Medrano PM; Beier S; Webster MW, 2017, 'From bench test to preclinical assessment', in *Bioresorbable Scaffolds: From Basic Concept to Clinical Applications*

Ormiston JO; Webber BW; SATHANANTHAN JS; Medrano PM; Beier S; Webster MW, 2017, 'Bench testing for polymeric bioresorbable scaffolds', in *Bioresorbable Scaffolds: From Basic Concept to Clinical Applications*, pp. 53 - 59, <http://dx.doi.org/10.1201/9781315380629>

Ormiston JA; Webber B; Sathananthan J; Medrano-Gracia P; Beier S; Webster MWI, 2017, 'Bench testing for polymeric bioresorbable scaffolds', in *Bioresorbable Scaffolds*, CRC Press, pp. 53 - 59, <http://dx.doi.org/10.1201/9781315380629-8>

Beier S; Ormiston J; Webster M; Cater J; Norris S; Medrano-Gracia P; Young A; Cowan B, 2017, 'Chapter 9 Vascular Hemodynamics with Computational Modeling and Experimental Studies', in *Computing and Visualization for Intravascular Imaging and Computer-Assisted Stenting*, pp. 227 - 251, <http://dx.doi.org/10.1016/b978-0-12-811018-8.00009-6>

Beier S; Ormiston J; Webster M; Cater J; Norris S; Medrano-Gracia P; Young A; Cowan B, 2017, 'Vascular Hemodynamics with Computational Modeling and Experimental Studies', in *Computing and Visualization for Intravascular Imaging and Computer-Assisted Stenting*, pp. 227 - 251, <http://dx.doi.org/10.1016/B978-0-12-811018-8.00009-6>

Conference Papers

Shen C; Canchi T; Gharleghi R; Beier S, 2020, 'Impact of Curvature, Bifurcation and Stenting on Secondary Flow in Idealised and Realistic Coronary Arteries', in *Australasian Fluid Mechanics Conference (AFMC)*, The University of Queensland, presented at 22nd Australasian Fluid Mechanics Conference AFMC2020, <http://dx.doi.org/10.14264/9d492ee>

Gharleghi R; Samarasinghe G; Sowmya A; Beier S, 2020, 'Deep Learning for Time Averaged Wall Shear Stress Prediction in Left Main Coronary Bifurcations', in *Proceedings - International Symposium on Biomedical Imaging*, pp. 818 - 821, <http://dx.doi.org/10.1109/ISBI45749.2020.9098715>

Wang L; Tian F; Beier S, 2019, 'An immersed boundary method for hemodynamics involving complex geometries', in *ACCM4*, Hobart, Tasmania, Australia, presented at The 4th Australasian Conference on Computational Mechanics, Hobart, Tasmania, Australia, 28 November 2019 - 29 November 2019

Gharleghi R; Wright H; Khullar S; Liu J; Ray T; Beier S, 2019, 'Advanced Multi-objective Design Analysis to Identify Ideal Stent Design', in *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, Shenzhen, China, pp. 193 - 200, presented at MLMECH, Shenzhen, China, 13 October 2019, http://dx.doi.org/10.1007/978-3-030-33327-0_23

Masoud-Ansari S; Ormiston J; Webster M; Pontre B; Cowan B; Beier S, 2019, 'Towards validating stent induced micro flow patterns in left main coronary artery bifurcations', in *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, pp. 5749 - 5752, <http://dx.doi.org/10.1109/EMBC.2019.8856419>

Beier S; Ormiston J; Webster M; Cater J; Norris S; Medrano-Gracia P; Young A; Gilbert K; Cowan B, 2016, 'Overcoming spatio-temporal limitations using dynamically scaled in vitro PC-MRI - A flow field comparison to true-scale computer simulations of idealized, stented and patient-specific left main bifurcations', in *Proceedings of the Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBS*, pp. 1220 - 1223, <http://dx.doi.org/10.1109/EMBC.2016.7590925>

Medrano-Gracia P; Ormiston J; Webster M; Beier S; Ellis C; Wang C; Young AA; Cowan BR, 2014, 'Construction of a coronary artery atlas from CT angiography', in *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, pp. 513 - 520, http://dx.doi.org/10.1007/978-3-319-10470-6_64

Beier S; Chen JJJ; Fortin H; Fafard M, 2011, 'FEM analysis of the anode connection in aluminium reduction cells', in *TMS Light Metals*, pp. 979 - 984