

LUCAS H. TIMMINS, PH.D.

Department of Biomedical Engineering
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ACADEMIC EMPLOYMENT**Assistant Professor**

Department of Biomedical Engineering
University of Utah

Aug. 2016 – present

Affiliate Faculty Member

Scientific Computing and Imaging Institute
University of Utah

Aug. 2016 – present

Instructor

Department of Radiology & Imaging Sciences
Emory University School of Medicine

Aug. 2015 – July 2016

EDUCATION**Post-doctoral Fellow**

Wallace H. Coulter Department of Biomedical Engineering
Georgia Institute of Technology and Emory University
Division of Cardiology, Department of Medicine
Emory University School of Medicine
Co-advisors: Don P. Giddens, Ph.D., John N. Oshinski, Ph.D., Habib Samady, M.D.

Feb. 2010 – July 2015

Doctor of Philosophy

Department of Biomedical Engineering
Texas A&M University
Dissertation Title: “Stented Artery Biomechanics: A Computational and In Vivo Analysis of Stent Design and Pathobiological Response”
Advisor: James E. Moore Jr., Ph.D.

May 2010

Whitaker International Fellow

Pathology Group
Blizard Institute of Cell and Molecular Science
Barts and The London School of Medicine and Dentistry
Queen Mary, University of London
Advisor: Stephen E. Greenwald, Ph.D.

Jan. 2007 – Dec. 2007

Bachelor of Science

Department of Biomedical Engineering
Texas A&M University

May 2005

HONORS & AWARDS

- Whitaker International Program Fellowship, Jan. 2007
- International Education Study Grant, Texas A&M University, July 2008
- Graduate Regent’s Fellowship, Dept. of Biomedical Engineering, Texas A&M University, Aug. 2008
- American Heart Association Postdoctoral Fellowship (Greater Southeast Affiliate), July 2011
- Gandy-Diaz Teaching Fellowship, Wallace H. Coulter Dept. of Biomedical Engineering, Georgia Institute of Technology and Emory University, Aug. 2011
- Robert M. Nerem International Travel Award, Parker H. Petit Institute of Bioengineering & Biosciences, Georgia Institute of Technology, June 2012
- Young Investigator Award, 8th International Symposium on Biomechanics in Vascular Biology & Cardiovascular Disease, Rotterdam, NL, Apr. 2013
- Outstanding Postdoc Award (1 of 4 awarded in School of Medicine), Emory University School of Medicine, Mar. 2015

REFEREED JOURNAL PUBLICATIONS (* INDICATES STUDENT ADVISED BY TIMMINS)

Impact: A Cited Reference Search on ISI Web of Science (Clarivate Analytics) in January 2022 with the author name “Timmins LH” retrieved a total of 1,519 citations to my papers (29.2 avg. citations per publication) and my h-index (measure of composite scientific impact) was 18. On Google Scholar ([link](#)), my citation count and h-index are 2,387 and 21, respectively.

For reference, here are the impact factors for 2020 (InCites Journal Citation Reports, Clarivate Analytics) and field-specific quartile rankings from SCImago for 2020 of journals I have published in.

| Journal Name | Impact Factor | SCImago Quartile (discipline) |
|--|---------------|--|
| European Heart Journal | 29.98 | Q1 (cardiovascular medicine) |
| Circulation | 29.69 | Q1 (cardiovascular medicine) |
| Journal of the American College of Cardiology (JACC) | 24.09 | Q1 (cardiovascular medicine) |
| JACC – Cardiovascular Interventions | 11.20 | Q1 (cardiovascular medicine) |
| IEEE Transactions on Medical Imaging | 10.05 | Q1 (electrical & electronic engineering) |
| Journal of the Royal Society Interface | 4.12 | Q1 (biomedical engineering) |
| Annals of Biomedical Engineering | 3.93 | Q2 (biomedical engineering) |
| ASME Journal of Biomechanical Engineering | 2.10 | Q3 (biomedical engineering) |

1. Bedoya, J., Meyer, C.A., **Timmins, L.H.**, Moreno, M.R., Moore, J.E., Jr., 2006, “Effects of Stent Design Parameters on Normal Artery Wall Mechanics,” *J. Biomech. Eng.*, vol. 128(5), pp. 757-765.
2. **Timmins, L.H.**, Moreno, M.R., Meyer, C.A., Criscione, J.C., Rachev, A., Moore, J.E., Jr., 2007, “Stented Artery Biomechanics and Device Design Optimization,” *Med. Bio. Engr. Comput.*, vol. 45, pp. 505-513.
3. **Timmins, L.H.**, Meyer, C.A., Moreno, M.R., Moore, J.E., Jr., 2008, “Mechanical Modeling of Stents Deployed in Tapered Arteries,” *Ann. Biomed. Eng.*, vol. 36(12), pp. 2042-2050.
4. **Timmins, L.H.**, Meyer, C.A., Moreno, M.R., Moore, J.E., Jr., 2008, “Effects of Stent Design and Atherosclerotic Plaque Composition on Arterial Wall Biomechanics,” *J. Endovasc. Ther.*, vol. 15(6), pp. 643-654.
5. **Timmins, L.H.**, Wu, Q., Yeh, A.T., Moore, J.E., Jr., Greenwald, S.E., 2010, “Structural Inhomogeneity and Fiber Orientation in the Inner Arterial Media”, *Am. J. Physiol. Heart Circ. Physiol.*, vol. 298, pp. H1537-H1545.
6. Moore, J.E., Jr., **Timmins, L.H.**, LaDisa, J.F., Jr., 2010, “Coronary Artery Bifurcation Biomechanics and Implications for Interventional Strategies,” *Catheter. Cardiovasc. Interv.*, vol. 76(6), pp. 836-843.
7. **Timmins, L.H.**, Miller, M.W., Clubb, F.J., Jr., Moore, J.E., Jr., 2011, “Increased Artery Wall Stress Post-Stenting Leads to Greater Intimal Thickening,” *Lab. Invest.*, vol. 91(6), pp. 955-967.
8. Samady, H., Eshtehardi, P., McDaniel M.C., Suo, J., Dhawan, S.S., Maynard, C., **Timmins, L.H.**, Quyyumi, A.A., Giddens, D.P., 2011, “Coronary Artery Wall Shear Stress is Associated with Progression and Transformation of Atherosclerotic Plaque and Arterial Remodeling in Patients with Coronary Artery Disease,” *Circulation*, vol. 124(7), pp. 779-88.
9. Eshtehardi, P., McDaniel M.C., Suo, J., Dhawan, S.S., **Timmins, L.H.**, Binongo, J.N.G., Golub, L.J., Corban, M.T., Finn, A.V., Oshinski, J.N., Quyyumi, A.A., Giddens, D.P., Samady, H., 2012, “Association of Coronary Wall Shear Stress with Atherosclerotic Plaque Burden, Composition, and Distribution in Patients with Coronary Artery Disease,” *J. Am. Heart Assoc.*, vol. 1(4), 1:e002543.
10. Gogas, B.D., King, S.B., III, **Timmins, L.H.**, Passerini, T., Piccinelli, M., Veneziani, A., Kim, S., Molony D.S., Giddens, D.P., Serruys, P.W., Samady, H., 2013, “Biomechanical Assessment of Fully Bioresorbable Devices,” *JACC Cardiovasc. Interv.*, vol. 6(7), pp. 758-59.
11. **Timmins, L.H.**, Suever, J.D., Eshtehardi, P., McDaniel, M.C., Oshinski, J.N., Samady, H., Giddens, D.P., 2013, “Framework to Co-register Longitudinal Virtual Histology-Intravascular Ultrasound Data in the Circumferential Direction,” *IEEE Trans. Med. Imaging*, vol. 32(11), pp. 1989-96.
12. Campbell, I.C., **Timmins, L.H.**, Giddens, D.P., Virmani, R., Veneziani, A., Rab, S.T., Samady, H., McDaniel, M.C., Finn, A.V., Taylor, W.R., Oshinski, J.N., 2013, “Computational Fluid Dynamics Simulations of Hemodynamics in Plaque Erosion,” *Cardiovasc. Eng. Technol.*, vol. 4(4), pp. 464-73.
13. **Timmins, L.H.**, Mackie, B.D., Oshinski, J.N., Giddens, D.P., Samady, H., 2013, “Co-localization of Low and Oscillatory Coronary Wall Shear Stress with Subsequent Culprit Lesion Resulting in Myocardial Infarction in an Orthotopic Heart Transplant Patient,” *JACC Cardiovasc. Interv.*, vol. 6(11), pp. 1210-11.
14. Corban, M.T., Eshtehardi, P., Suo, J., McDaniel, M.C., **Timmins, L.H.**, Rasoul-Arzrumly, E., Maynard, C., Mekonnen, G., Taylor, W.R., Quyyumi, A.A., Giddens, D.P., Samady, H., 2014, “Combination of Plaque Burden, Wall Shear Stress, and Plaque Phenotype has Incremental Value for Prediction of Coronary Atherosclerotic Plaque Progression and Vulnerability,” *Atherosclerosis*, vol. 232(2), pp. 271-76.

15. Corban, M.T., Hung, O.Y., Eshtehardi, P., Rassoul-Arzrumly, E., McDaniel, M.C., Mekonnen, G., **Timmins, L.H.**, Lutz, J., Guyton, R.A., Samady, H., 2014, "Myocardial Bridging: Evolving Understanding of Pathophysiology and Contemporary Diagnostic and Therapeutic Strategies," *J. Am. Coll. Cardiol.*, vol. 63(22), pp. 2346-55.
16. Campbell, I.C., Suever, J.D., **Timmins, L.H.**, Veneziani, A., Vito, R.P., Virmani, R., Oshinski, J.N., Taylor, W.R., 2014, "Biomechanics and Inflammation in Atherosclerotic Plaque Erosion and Plaque Rupture: Implications for Cardiovascular Events in Women," *PLoS ONE*, vol. 9(11), e111785.
17. **Timmins, L.H.**, Molony, D.S., Eshtehardi, P., McDaniel, M.C., Oshinski, J.N., Samady, H., Giddens, D.P., 2015, "Focal Association Between Wall Shear Stress and Clinical Coronary Artery Disease Progression," *Ann. Biomed. Eng.*, vol. 43(1), pp. 94-106.
18. Molony, D.S., **Timmins, L.H.**, Hung, O.Y., Rasoul-Arzrumly, E., Samady, H., Giddens, D.P., 2015, "An Assessment of Intra-Patient Variability on Observed Relationships Between Wall Shear Stress and Plaque Progression in Coronary Arteries," *BioMed. Eng. Online*, 14(Suppl 1):S2.
19. **Timmins, L.H.**, Gupta, D., Corban, M.T., Molony, D.S., Oshinski, J.N., Samady, H., Giddens, D.P., 2015, "Co-localization of Disturbed Flow Patterns and Occlusive Cardiac Allograft Vasculopathy Lesion Formation in Heart Transplant Patients," *Cardiovasc. Eng. Technol.*, vol. 6(1), pp. 25-35.
20. Mannino, R.G., Myers, D.R., Byungwook, A., Wang, Y., Rollins, M., Gole, H., Lin, A., Guldborg, R.E., Giddens, D.P., **Timmins, L.H.**, Lam, W.A., 2015, "Do-it-yourself In Vitro Vasculature that Recapitulates Complex In Vivo Geometries for Investigating Endothelial-blood Cell Interactions," *Scientific Reports*, vol. 5:12401.
21. Hung, O.Y., Molony, D., Corban, M.T., Rasoul-Arzrumly, E., Maynard, C., Eshtehardi, P., **Timmins, L.H.**, Piccinello, M., Ahn, S., Gogas, B.D., McDaniel, M.C., Quyyumi, A.A., Giddens, D.P., Samady, H., 2016, "Comprehensive Assessment of Coronary Plaque Progression with Advanced Intravascular Imaging, Physiologic Measures and Wall Shear Stress: A Double-Blinded Randomized-Controlled Clinical Trial of Nebivolol vs. Atenolol in Non-obstructive Coronary Artery Disease," *J. Am. Heart Assoc.*, vol. 5(1), 5:e002764.
22. Brown, A.C., Hannan, R., **Timmins, L.H.**, Fernandez, J., Barker, T.H., Guzzetta, N.A., 2016, "Fibrin Network Changes in Neonates After Cardiopulmonary Bypass," *Anesthesiology*, vol. 124(5), pp. 1021-31.
23. **Timmins, L.H.**, Suo, J., Eshtehardi, P., Molony, D.S., McDaniel, M.C., Oshinski, J.N., Giddens, D.P., Samady, H., 2016, "Comparison of Angiographic and IVUS Derived Coronary Geometric Reconstructions for Evaluation of Hemodynamics and Association with Coronary Artery Disease Progression," *Int. J. Cardiovasc. Imaging*, vol. 32(9), pp. 1327-36.
24. Molony, D.S., **Timmins, L.H.**, Rassoul-Arzrumly, E., Samady, H., Giddens, D.P., 2016, "Evaluation of a Framework for the Co-registration of Intravascular Ultrasound and Optical Coherence Tomography Coronary Artery Pullbacks," *J. Biomech.*, vol. 49(16), pp. 4048-56.
25. **Timmins, L.H.**, Molony, D.S., Eshtehardi, P., Rasoul-Arzrumly, E., Lam, A., Hung, O.Y., McDaniel, M.C., Oshinski, J.N., Giddens, D.P., Samady, H., 2017, "Quantification of the Focal Progression of Coronary Atherosclerosis Through Automated Co-registration of Virtual Histology-Intravascular Ultrasound Imaging Data," *Int. J. Cardiovasc. Imaging*, vol. 33(1), pp. 13-24.
26. **Timmins, L.H.**, Molony, D.S., Eshtehardi, P., McDaniel, M.C., Oshinski, J.N., Giddens, D.P., Samady, H.S., 2017, "Oscillatory Coronary Wall Shear Stress is a Dominant Flow Characteristic in Lesion Progression Patterns and Plaque Vulnerability in Patients with Coronary Artery Disease," *J. R. Soc. Interface*, vol. 14(127), pii. 20160972.
27. Long, C.A.†, **Timmins, L.H.**†, Koutakis, P., Goodchild, T.T., Lefer, D.J., Pipinos, I.I., Casale, G.P., Brewster, L.P., 2017, "An Endovascular Model of Ischemic Myopathy from Peripheral Artery Disease," *J. Vasc. Surg.*, vol. 66(3), pp. 891-901. †equal contributions
28. Birjiniuk, J., **Timmins, L.H.**, Young, M., Leshnower, B.G., Oshinski, J.N., Ku, D.N., Veeraswamy, R.K., 2017, "Pulsatile Flow Leads to Intimal Flap Motion and Flow Reversal in an In Vitro Model of Type B Aortic Dissection," *Cardiovasc. Eng. Technol.*, vol. 8(3), pp. 378-89.
29. Kim, C.W., Pokutta-Paskaleva, A., Kumar, S., **Timmins, L.H.**, Morris, A.D., Kang, D.W., Dalal, S. Chadid, T., Kuo, K., Raykin, J., Li, H. Yanagisawa, H., Gleason, R.L., Jo, H., Brewster, L.P., 2017, "Disturbed Flow Promotes Arterial Stiffening through Thrombospondin-1 (TSP-1)," *Circulation*, vol., 136(13), pp. 1217-1232.
30. Elliott, M.R.*, Kim, D.*, Molony, D.S., Morris, L., Samady, S., Joshi, S., **Timmins, L.H.**, 2019, "Establishment of an Automated Algorithm Utilizing Optical Coherence Tomography and Micro-Computed Tomography Imaging to Reconstruct the 3D Deformed Stent Geometry," *IEEE Trans. Med. Imaging*, vol. 38(3), pp. 710-20.
31. Costopoulos, C.†, **Timmins, L.H.**†, Huang, Y.†, Hung, O.Y., Molony, D.S., Brown, A.J., Davis, E.L., Teng, Z., Gillard, J.H., Samady, H., Bennett, M.R., 2019, "Impact of Combined Plaque Structural Stress and Wall Shear Stress on Coronary Plaque Progression, Regression, and Changes in Composition," *Eur. Heart J.*, vol. 40(18), pp. 1411-1422. †equal contributions

32. Kok, A.M., Molony, D.S., **Timmins, L.H.**, Ko, Y., Boersma, E., Eshtehardi, P., Wentzel, J.J., Samady, H., 2019, “The Influence of Multidirectional Shear Stress on Plaque Progression and Destabilization in Human Coronary Arteries,” *EuroIntervention*, vol. 15(8), pp. 692-699.
33. Gijssen, F., Katagiri, Y., Barlis, P., Bourantas, C., Collet, C., Coskun, U., Daemen, J., Dijkstra, J., Edelman, E., Evans, P., van der Heiden, K., Hose, R., Ko, B.K., Krams, R., Marsden, A., Migliavacca, F., Onuma, Y., Ooi, A., Poon, E., Samady, S., Stone, P., Takahashi, K., Tang, D., Thondapu, V., Tenekcioglu, E., **Timmins, L.**, Torii, R., Wentzel, J., Serruys, P., 2019, “Expert Consensus on the Assessment of Wall Shear Stress in Human Coronary Arteries: Existing Methodologies, Technical Considerations, and Clinical Applications,” *Eur. Heart J.*, vol. 40(41), pp. 3421-3433.
34. Huang, C., Knighton, N., **Timmins, L.H.**, Sachse, F., 2020, “Catheter-Based Optical Approaches for Cardiovascular Medicine: Progress, Challenges and New Directions,” *Prog. Biomed. Eng.*, vol. 2(3), pp. 032001.
35. Hair, J., **Timmins, L.H.**, El Sayed, R., Samady, H., Oshinski, J.N., 2021, “Effect of Patient-Specific Coronary Flow Reserve (CFR) Values on the Accuracy of Virtual Fractional Flow Reserve (vFFR),” *Front. Bioeng. Biotechnol.*, vol. 8, article 663767.
36. Zimmerman, B.K., Jang, D.*, Weiss, J.A., **Timmins, L.H.**, Ateshian, G.A., 2021, “On the Use of Constrained Reactive Mixtures of Solids to Model Finite Deformation Isothermal Elastoplasticity and Elastoplastic Damage Mechanics,” *J. Mech. Phys. Solids*, vol. 155, article 104534.
37. Smith, K.A.*, Merchant, S.S., Hsu, E.W., **Timmins, L.H.**, 2021, “Effects of Subject-Specific, Spatially-Reduces, and Idealized Boundary Conditions on the Predicted Hemodynamic Environment in the Murine Aorta,” *Ann. Biomed. Eng.*, vol. 49(12), pp. 3255-3266.
38. Patel, M.B., Savvopoulos, F., Berggren, C.C., Aslanidou, L., **Timmins, L.H.**, Pedrigi, R.M., de Silva, R., Krams, R., “Considerations for Analysis of Endothelial Shear Stress and Strain in FSI Models of Atherosclerosis,” *J. Biomech.*, vol. 128, article 110704.
39. Rauff, A., **Timmins, L.H.**, Whitaker, R.T., Weiss, J.A., 2022, “A Non-Biased Approach to Measure Three-Dimensional Fiber Orientation Distribution Function (ODF) in Fibrous Materials,” *IEEE Trans. Med. Imaging*, vol. 41(2), pp. 446-455.
40. Iffrig, E., **Timmins, L.H.**, El Sayed, R., Taylor, W.R., Oshinski, J.N., “Quantification of Sex-based Differences in Abdominal Aorta Wall Shear Stress Using a Methodology Based on Magnetic Resonance Phase Contrast Imaging and the Womersley Solution,” *J. Biomech. Eng.* (submitted).
41. Hurd, E.R.*, Han, M., Mendes, J.K., Hadley, J.R., Johnson, C.R., DiBella, E.V.R., Oshinski, J.N., **Timmins, L.H.**, “Comparison of Prospective and Retrospective Gated 4D Flow Cardiac MR Image Acquisitions in the Carotid Bifurcation,” *Cardiovasc. Eng. Technol.* (submitted).
42. Cosgriff-Hernandez, E., **Timmins, L.H.**, “Model-Directed Design of Tissue Engineering Scaffolds,” *ACS Biomater. Sci. Eng.* (submitted).

BOOK CHAPTERS

1. Molony, D.S., **Timmins, L.H.**, Rasoul-Arzrumly, E., Samady, H., Giddens, D.P., 2014, “Investigation of the Influence of Side-Branched on Wall Shear Stress in Coronary Arteries Reconstructed from Intravascular Ultrasound,” in Computational Biomechanics for Medicine: Fundamental Science and Patient-specific Applications, Doyle, B., Miller, K., Wittek, A., Nielson, P.M.F. (Eds.), Springer, New York, NY.
2. **Timmins, L.H.**, Samady, H., Oshinski, J.N., 2020, “Effect of Regional Analysis Methods on Assessing the Association Between Wall Shear Stress and Coronary Artery Disease Progression in the Clinical Setting,” in Biomechanics of Coronary Atherosclerotic Plaques: From Model to Patient, Ohayon, J., Finet, G., Pettigrew, R.I. (Eds.), Elsevier, Philadelphia, PA.

REFEREED CONFERENCE PROCEEDINGS (PRESENTER UNDERLINED; * INDICATES STUDENT ADVISED BY TIMMINS)

1. Moore, J.E., Jr., Bedoya, J., Meyer, C.A., **Timmins, L.H.**, Moreno, M.R., “Stents: Design Considerations and Diverse Computational Modeling,” 8th US National Congress on Computational Mechanics, Austin, TX, July 2005.
2. Moore, J.E., Jr., Bedoya, J., Meyer, C.A., **Timmins, L.H.**, Moreno, M.R., “Stented Artery Biomechanics and Device Design Optimization,” 5th World Congress of Biomechanics, Munich, Germany, Aug. 2006.
3. **Timmins, L.H.**, Moreno, M.R., Meyer, C.A., Criscione, J.C., Rachev, A., Moore, J.E., Jr., “Stented Artery Biomechanics and Device Design Optimization,” Houston Society of Engineering in Medicine & Biology, Houston, TX, Feb. 2007.
4. **Timmins, L.H.**, Meyer, C.A., Moreno, M.R., Moore, J.E., Jr., “Stented Artery Biomechanics in the Presence of Stenoses and Tapering,” ASME Summer Bioengineering Conference, Keystone, CO, June 2007.
5. Moore, J.E., Jr., Moreno, M.R., Soares, J.S., **Timmins, L.H.**, Meyer, C.A., “Stented Artery Biomechanics and Design Rationale for Biodegradation,” 44th Annual Technical Meeting Society of Engineering Science, College Station, TX, Oct. 2007.
6. **Timmins, L.H.**, Evagora, C.A., Moore, J.E., Jr., Greenwald, S.E., “Experimental Investigation of Mechanical and Structural Inhomogeneity in Bovine Carotid Arteries,” ASME Summer Bioengineering Conference, Marco Island, FL, June 2008.

7. **Timmins, L.H.**, Evagora, C.A., Moore, J.E., Jr., Greenwald, S.E., “Investigation into the Mechanical and Cytoskeletal Protein Inhomogeneity in Bovine Carotid Arteries,” Bioengineering 08, Imperial College London, London, UK, Sept. 2008.
8. **Timmins, L.H.**, Moore, J.E., Jr., Greenwald, S.E., “Mechanical and Microscopic Investigation of the Inhomogeneity in the Carotid Arteries of Large Mammals,” BMES Annual Fall Meeting, St. Louis, MS, Oct. 2008.
9. **Timmins, L.H.**, Wu, Q., Yeh, A.T., Moore, J.E., Jr., Greenwald, S.E., “Quantification of Cell Nucleus and Extracellular Matrix Fibre Orientation in the Inner Media of Elastic Arteries,” BMES Annual Fall Meeting, Pittsburgh, PA, Oct. 2009.
10. **Timmins, L.H.**, Miller, M.W., Clubb, F.J., Jr., **Moore, J.E., Jr.**, “Porcine Neointimal Growth in High Versus Low Stress Stents,” Symposium of Biomechanics Endocardiac Research, Marseille, France, May 2010.
11. **Timmins, L.H.**, Miller, M.W., Clubb, F.J., Jr., Moore, J.E., Jr., “Computational and In Vivo Analysis of the Role of Solid Biomechanics in the Development of Intimal Thickening Post-Stenting,” ASME Summer Bioengineering Conference, Naples, FL, June 2010.
12. **Moore, J.E., Jr.**, **Timmins, L.H.**, Miller, M.W., Clubb, F.J., Jr., “Increased Solid Mechanical Stress Leads to Increased Neointimal Thickening Post-Stenting,” 6th World Congress of Biomechanics, Singapore, Aug. 2010.
13. **Timmins, L.H.**, Moore, J.E., Jr., “Computational Models for Understanding Stent Thrombosis (Stent Design and Platelet Interaction),” TCT 2010, Washington D.C., Sept. 2010. (invited)
14. **Timmins, L.H.**, Suo, J., Eshtehardi, P., Dhawan, S.S., King, A.R., McDaniel, M.C., Samady, H., Giddens, D.P., “Calculation of Coronary Wall Shear Stress Using Angiographic 3-Dimensional Reconstructions and Doppler Derived Velocity Measurements: A Novel Streamlined Technique for Clinical Assessment of Coronary Plaque Progression,” BMES Annual Fall Meeting, Austin, TX, Oct. 2010.
15. **Oshinski, J.N.**, Campbell, I., **Timmins, L.H.**, Samady, H., Giddens, D.P., “Imaging to Determine In-vivo, Patient Specific Geometry and Flow Conditions for Calculation of Wall Shear Stress,” 6th International Symposium on Biomechanics in Vascular Biology & Cardiovascular Disease, Rotterdam, NL, April 2011.
16. **Timmins, L.H.**, Suo, J., Eshtehardi, P., Dhawan, S.S., McDaniel, M.C., Oshinski, J.N., Samady, H., Giddens, D.P., “Geometric and Hemodynamic Evaluation of 3-Dimensional Reconstruction Techniques for the Assessment of Coronary Artery Wall Shear Stress in the Setting of Clinical Disease Progression,” ASME Summer Bioengineering Conference, Farmington, PA, June 2011.
17. **Suo, J.**, McDaniel, M.C., Eshtehardi, P., Dhawan, S.S., **Timmins, L.H.**, Jo, H., Taylor, W.R., Samady, H., Giddens, D.P., “Intimal Thickening Sourced from Low Wall Shear Stress in Human Left Coronary Artery Was Observed by Optical Coherence Tomography,” ASME Summer Bioengineering Conference, Farmington, PA, June 2011.
18. **Timmins, L.H.**, Moore, J.E., Jr., Greenwald, S.E., “A Histological, Optical, and Mechanical Examination of Fiber Orientation and Response to Loading in Carotid Artery Tissue,” BMES Annual Fall Meeting, Hartford, CT, Oct. 2011.
19. **Eshtehardi, P.E.**, McDaniel, M.C., Suo, J., Dhawan, S.S., **Timmins, L.H.**, Binongo, J.N., Golub, L., Krishnan, S., Alexander, R.W., Taylor, W.R., Quyyumi, A.A., Giddens, D.P., Samady, H., “Low Coronary Wall Shear Stress Occurs Most Frequently in Segments Immediately Distal to Lesions While High WSS Occurs Most Frequently Within the Lesions: An Evaluation in Patients with Coronary Artery Disease,” AHA Scientific Sessions, Orlando, FL, Nov. 2011.
20. **Eshtehardi, P.E.**, McDaniel, M.C., Suo, J., Dhawan, S.S., **Timmins, L.H.**, Binongo, J.N., Golub, L., Krishnan, S., Alexander, R.W., Taylor, W.R., Quyyumi, A.A., Giddens, D.P., Samady, H., “Association of Wall Shear Stress with Atherosclerotic Plaque Burden and Composition: A Radiofrequency Intravascular Ultrasound Evaluation in Patients with Coronary Artery Disease,” AHA Scientific Sessions, Orlando, FL, Nov. 2011.
21. **Dhawan S.S.**, Avati Nanjundappa R.P., Eshtehardi P., Corban M., Golub L., **Timmins L.H.**, McDaniel M.C., Quyyumi A.A., Samady H., “Impaired Coronary Microvascular Function is Associated with Features of Plaque Vulnerability,” ACC Annual Scientific Session (ACC-12), Chicago, IL, Mar. 2012.
22. **Timmins, L.H.**, Suever, J.D., Eshtehardi, P. McDaniel, M.C., Samady, H., Oshinski, J.N., Giddens, D.P., “Framework to Co-register VH-IVUS Data for Regional Quantification of CAD Progression,” 7th International Symposium on Biomechanics in Vascular Biology & Cardiovascular Disease, Atlanta, GA, Apr. 2012.
23. **Timmins, L.H.**, Suever, J.D., Eshtehardi, P., McDaniel, M.C., Samady, H., Oshinski, J.N., Giddens, D.P., “Correlation of Longitudinal Intravascular Ultrasound Data for the Clinical Assessment of Coronary Artery Disease Progression,” ASME Summer Bioengineering Conference, Fajardo, Puerto Rico, June 2012.
24. **Timmins, L.H.**, Corban, M.T., Gupta, D., Samady, H., Oshinski, J.N., Giddens, D.P., “Colocalization of Wall Shear Stress and Coronary Allograft Vasculopathy Lesion Location in Cardiac Transplant Patients,” BMES Annual Fall Meeting, Atlanta, GA, Oct. 2012.
25. **Corban M.T.**, Eshtehardi P., McDaniel M.C., Suo J., Dhawan S.S., Maynard C., **Timmins L.H.**, Quyyumi A.A., Giddens D.P., Samady H., “Combination of High Wall Shear Stress, Plaque Burden, and Plaque Phenotype has Incremental Value for Prediction of Increased Plaque Vulnerability in Patients with Coronary Artery Disease,” TCT 2012, Miami, FL, Oct. 2012.

26. Corban M.T., Eshtehardi P., McDaniel M.C., Suo J., Dhawan S.S., Maynard C., **Timmins L.H.**, Rasoul-Arzrumly E., Quyyumi A.A., Giddens D.P., Samady H., “Combination of Large Plaque Burden and Low Wall Shear Stress Results in Greater Progression of Coronary Atherosclerosis than Low Wall Shear Stress Alone in Patients with Coronary Artery Disease,” TCT 2012, Miami, FL, Oct. 2012.
27. Corban M.T., Piccinelli M., **Timmins L.H.**, Passerini T., Eshtehardi P., Nanjundappa R.A., Rasoul-Arzrumly E., McDaniel M.C., Oshinski J., Quyyumi A.A., Veneziani A., Giddens D.P., Samady H., “Lower Coronary Wall Shear Stress is Associated with Endothelial Dysfunction in Patients with Non-Obstructive Coronary Artery Disease,” AHA Scientific Sessions, Los Angeles, CA, Nov. 2012.
28. Eshtehardi, P., Corban, M.T., Suo, J., Piccinelli, M., **Timmins, L.H.**, Passerini, T., Rasoul-Arzrumly, E., McDaniel, M.C., Mekonnen, G., Quyyumi, A.A., Veneziani, A., Giddens, D.P., Samady, H., “Higher Coronary Wall Shear Stress is Associated with Greater Impairment in Microvascular Function in Patients with Non-Obstructive Coronary Artery Disease,” ACC Annual Scientific Session (ACC-13), San Francisco, CA, Mar. 2013.
29. **Timmins, L.H.**, Gupta, D., Corban, M.T., Oshinski, J.N., Samady, H., Giddens, D.P., “Spatial Association Between Low and Oscillatory Wall Shear Stress and Occlusive Cardiac Allograft Vasculopathy Lesion Formation in Heart Transplant Patients,” 8th International Symposium on Biomechanics in Vascular Biology & Cardiovascular Disease, Rotterdam, NL, Apr. 2013.
30. **Timmins, L.H.**, Molony, D.S., Eshtehardi, P., McDaniel, M.C., Oshinski, J.N., Samady, H., Giddens, D.P., “Development of Framework to Examine the Focal Association Between Wall Shear Stress and Coronary Artery Disease Progression in the Clinical Setting,” ASME Summer Bioengineering Conference, Sunriver, OR, June 2013.
31. Molony, D.S., **Timmins, L.H.**, Eshtehardi, P., Rasoul-Arzrumly, E., Samady, H., Giddens, D.P., “CFD and VH-IVUS Biomechanical Analysis of Coronary Artery Disease with One Year Follow-up,” ASME Summer Bioengineering Conference, Sunriver, OR, June 2013.
32. **Timmins, L.H.**, Molony, D.S., Eshtehardi, P., McDaniel, M.C., Oshinski, J.N., Samady, H., Giddens, D.P., “Clinical Data Uncertainties in CFD Modeling: The Association Between Coronary Artery Disease Progression and Absolute Versus Relative Wall Shear Stress,” 9th International Symposium on Biomechanics in Vascular Biology & Cardiovascular Disease, Montreal, CA, Apr. 2014.
33. Molony, D.S., **Timmins, L.H.**, Rasoul-Arzrumly, E., Hung, O.Y., Samady, H., Giddens, D.P., “Investigating the Influence of Coronary Side-branches on the Relationship Between Wall Shear Stress and Plaque Progression,” 9th International Symposium on Biomechanics in Vascular Biology & Cardiovascular Disease, Montreal, CA, Apr. 2014.
34. **Timmins, L.H.**, Molony, D.S., Eshtehardi, P., McDaniel, M.C., Oshinski, J.N., Samady, H., Giddens, D.P., “Examination of Differences Between Regional and Local Analysis Methods When Assessing Human Coronary Artery Hemodynamics,” 7th World Congress of Biomechanics, Boston, MA, July 2014.
35. Greenwald, S.E., Evagora, C., **Timmins, L.H.**, Moore, J.E., Jr., “Characterization of the Two-Layered “Media” in the Mammalian Carotid Artery,” 7th World Congress of Biomechanics, Boston, MA, July 2014.
36. Giddens, D.P., Samady, H., **Timmins, L.H.**, Molony, D.S., Suo, J., Gogas, B.D., Corban, M.T., McDaniel, M.C., Veneziani, A., Hung, O., Piccinelli, M., “Wall Shear Stress and Plaque Progression in Human Coronary Arteries: Esoteric Concept of Clinically Relevant?,” 7th World Congress of Biomechanics, Boston, MA, July 2014.
37. Oshinski, J., Campbell, I., **Timmins, L.**, Iffrig, E., Lam, A., Tong, F., Taylor, W., Samady, H., Giddens, D., “Imaging Hemodynamics: from Histology to MRI,” 7th World Congress of Biomechanics, Boston, MA, July 2014.
38. Molony, D., **Timmins, L.**, Rasoul-Arzumly, E., McDaniel, M.C., Oshinski, J.N., Samady, H., Giddens, D., “A Prospective Study of the Relationship Between Wall Shear Stress and Atherosclerotic Plaque Transformation,” 7th World Congress of Biomechanics, Boston, MA, July 2014.
39. **Timmins, L.H.**, Molony, D.S., Eshtehardi, P., McDaniel, M.C., Oshinski, J.N., Samady, H., Giddens, D.P., “Phenotypic Differences in Coronary Artery Disease Progression in the Clinical Setting and Dependence on a Focal Oscillatory Hemodynamic Environment,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), Snowbird, UT, June 2015.
40. Molony, D.S., **Timmins, L.H.**, Rasoul-Arzumly, E., Hung, O., Gogas, B., Samady, H., Giddens, D.P., “Development of a Framework to Characterize the Role of Wall Shear Stress in Atherosclerotic Plaque Transformation Through the Combined Use of OCT and VH-IVUS,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), Snowbird, UT, June 2015.
41. Birjiniuk, J., Ruddy, J.M., Young, M., **Timmins, L.H.**, Veeraswamy, R.K., Ku, D.K., “Experimental Evaluation of Hemodynamics in Patient-Specific Model of Type B Aortic Dissection,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), Snowbird, UT, June 2015.
42. Birjiniuk, J., Ruddy, J.M., Young, M., **Timmins, L.H.**, Oshinski, J.N., Ku, D.K., Veeraswamy, R.K., “Phase Contrast MR Imaging Reveals Novel Fluid Dynamics in a Patient-Derived Silicone Model of Descending Thoracic Aortic Dissection,” Society for Vascular Surgery Annual Meeting, Chicago, IL, June 2015.

43. **Timmins, L.H.**, Molony, D.S., Oshinski, J.N., Samady, H., Giddens, D.P., “Phenotypic Differences in Human Coronary Artery Disease Progression and Dependence on a Focal Oscillatory Hemodynamic Environment,” Computational Fluid Dynamics (CFD) in Medicine & Biology II, Albufeira, Portugal, Aug/Sept. 2015.
44. Molony, D.S., **Timmins, L.H.**, Rezvan, A., Fleischer, C., Park, J., Zhou, L. Hu, X. Giddens, D.P., “4D Phase Contrast MRI Derived Hemodynamics of the Rabbit Aortic Arch,” Computational Fluid Dynamics (CFD) in Medicine & Biology II, Albufeira, Portugal, Aug/Sept. 2015.
45. **Timmins, L.H.**, Dalal, S., Kuo, K., Morris, A., Li, H., Brewster, L.P., “Disturbed Hemodynamics Regulate Arterial Stiffening Through Thrombospondin-1 Dependent Mechanism,” European International Society of Applied Cardiovascular Biology Meeting, Nuremberg, Germany, Dec. 2015.
46. **Timmins, L.H.**, Molony, D.S., Eshtehardi, P., Oshinski, J.N., Samady, H., Giddens, D.P., “CFD and Coronary Artery Disease: Towards Employing WSS to Guide Clinical Decisions,” 8th International Bio-fluid Symposium, Pasadena, CA, Feb. 2016.
47. **Eshtehardi, P.**, Hung, O.Y., Corban, M.T., **Timmins, L.H.**, Molony, D.S., Ahn, S.G., Gogas, B.D., Bouchi, Y., Zeng, W., Sebaali, F., Joshi, U., Suh, J., Giddens, D.P., Samady, H., “Elevated Hyperemic Microvascular Resistance is Associated with Lower Coronary Wall Shear Stress in Patients with Non-obstructive Coronary Artery Disease,” ACC Annual Scientific Session (ACC.16), Chicago, IL, Apr. 2016.
48. **Timmins, L.H.**, Molony, D.S., Eshtehardi, P., McDaniel, M.C., Oshinski, J.N., Samady, H., Giddens, D.P., “Evaluation of Analysis Frameworks to Examine the Association Between Hemodynamics and VH-IVUS Defined Coronary Artery Disease Progression,” 11th International Symposium on Biomechanics in Vascular Biology & Cardiovascular Disease, Atlanta, GA, May 2016.
49. **Molony, D.S.**, **Timmins, L.H.**, Joshi, U., Bouchi, Y., Gogas, B., Samady, H., Giddens, D.P., “Wall Shear Stress and Combined VH-IVUS and OCT Analysis of Coronary Plaque Composition,” 11th International Symposium on Biomechanics in Vascular Biology & Cardiovascular Disease, Atlanta, GA, May 2016.
50. **Birjiniuk, J.**, **Timmins, L.H.**, Young, M., Oshinski, J.N., Veeraswamy, R.K., Ku, D.K., “Motion of Intimal Flap Leads to Flow Reversal in A Silicone In Vitro Model of Type B Aortic Dissection,” 11th International Symposium on Biomechanics in Vascular Biology & Cardiovascular Disease, Atlanta, GA, May 2016.
51. **Timmins, L.H.**, Molony, D.S., Eshtehardi, P., McDaniel, M.C., Oshinski, J.N., Samady, H., Giddens, D.P., “Assessment of Analysis Methods to Evaluate the Association Between Wall Shear Stress and Coronary Artery Disease Progression in the Clinical Setting,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), National Harbor, MD, June 2016.
52. **Molony, D.S.**, **Timmins, L.H.**, Joshi, U., Bouchi, Y., Gogas, B., Samady, H., Giddens, D.P., “Wall Shear Stress and Combined VH-IVUS and OCT Analysis of Coronary Plaque Composition,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), National Harbor, MD, June 2016.
53. **Birjiniuk, J.**, **Timmins, L.H.**, Young, M., Oshinski, J.N., Veeraswamy, R.K., Ku, D.K., “Flap Motion and Flow Reversal Vary with Number of Tears in an In Vitro Model of Descending Thoracic Aortic Dissection,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), National Harbor, MD, June 2016.
54. **Brewster, L.P.**, Morris, A., **Timmins, L.H.**, Pokutta-Paskaleva, A., “Role of Aging and Exercise on Arterial Remodeling in Mice,” 15th Biennial Meeting of the International Society for Applied Cardiovascular Biology (ISACB), Banff, Alberta, Sept. 2016.
55. **Timmins, L.H.**, “Association Between Wall Shear Stress and Clinical Coronary Artery Disease Progression - Do Evaluation Methods Drive Conclusions?,” 5th International Conference on Computational & Mathematical Biomedical Engineering (CMBE17), Pittsburgh, PA, April 2017.
56. **Hair, J.B.**, **Timmins, L.H.**, Oshinski, J.N., “Noninvasive Estimation of Coronary Fractional Flow Reserve (FFR) Using Magnetic Resonance Imaging: Methodology and Preliminary Results,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), Tucson, AZ, June 2017.
57. **Kok, A.M.**, Molony, D.S., **Timmins, L.H.**, Ko, Y.A., Eshtehardi, P., Wentzel, J.J., Samady, H., “An Investigation of Multidirectional Flow and Plaque Progression in Human Coronary Arteries,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), Tucson, AZ, June 2017.
58. **Pedrigi, R.M.**, Patel, M.B., Mehta, V.V., Savvopoulos, F., Kondiboyina, A., **Timmins, L.H.**, Krams, R., “A Fluid-Structure Interaction Model of a Cuffed Carotid Artery of an ApoE^{-/-} Mouse,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), Tucson, AZ, June 2017.
59. **Elliott, M.***, Kim, D.*, Molony, D., Morris, L., Joshi, S., **Timmins, L.**, “Image Processing Framework Utilizing OCT and MicroCT to Characterize the 3D Deformed In Vivo Stent Geometry,” BMES Annual Fall Meeting, Phoenix, AZ, Oct. 2017.
60. **Elliott, M.R.***, Kim, D.*, Molony, D.S., Morris, L., Samady, H., Joshi, S., **Timmins, L.H.**, “Establishment of an Automated Algorithm Utilizing OCT and MicroCT Imaging to Reconstruct the 3D Deformed In Vivo Stent Geometry,” 13th International Symposium on Biomechanics in Vascular Biology & Cardiovascular Disease, Atlanta, GA, Apr. 2018.

61. Elliott, M.*, Kim, D.*, Molony, D., Morris, L., Joshi, S., **Timmins, L.**, “Establishment of a Diffeomorphic Mapping Based Reconstruction Algorithm Utilizing OCT and MicroCT to Characterize the 3D Deformed In Vivo Stent Geometry,” 8th World Congress of Biomechanics, Dublin, Ireland, July 2018.
62. **Smith, K.A.***, Merchant, S.S., Hsu, E.W., **Timmins, L.H.**, “Sensitivity of Predicted Hemodynamic Environment in Murine Aorta to Prescribed Boundary Conditions,” BMES Annual Fall Meeting, Atlanta, GA, Oct. 2018.
63. **Jiang, D.***, Hurd, E.*, Morris, L., **Timmins, L.H.**, “Design and Construction of A Magnetic Resonance Imaging Compatible Physiologic Flow Circuit,” BMES Annual Fall Meeting, Atlanta, GA, Oct. 2018.
64. Elliott, M.R.*, Molony, D.S., Smith, B.R., Joshi, S., Samady, H., **Timmins, L.**, “Towards the Establishment of Lesion-specific Stenting Strategies: Correction of Curvature Induced OCT Image Distortion is Required for Accurate 3D Reconstruction of Deployed Coronary Stents,” 14th International Symposium on Biomechanics in Vascular Biology & Cardiovascular Disease, London, UK, Apr. 2019.
65. **Oshinski, J.**, Hair, J., Molony, D., **Timmins, L.**, Samady, H., “Effect of Patient-Specific Values of Coronary Flow Reserve (CFR) on the Accuracy of Non-Invasive Fractional Flow Reserve (FFR) Estimates,” 14th International Symposium on Biomechanics in Vascular Biology & Cardiovascular Disease, London, UK, Apr. 2019.
66. **Smith, K.A.***, Merchant, S.S., Hsu, E.W., **Timmins, L.H.**, “Effects of Subject-Specific, Spatially Reduced, and Idealized Boundary Conditions on the Predicted Hemodynamics Environment in the Murine Aorta,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), Seven Springs, PA, June 2019.
67. **Elliott, M.R.***, Molony, D.S., Smith, B.R., Joshi, S., Samady, H., **Timmins, L.H.**, “3D Reconstructions of Deployed Coronary Stents in the Clinical Setting: Investigation of Distortion Effects from Curvature on the Circumferential Origination of OCT Images,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), Seven Springs, PA, June 2019. (presented by D. Jiang*)
68. **Bean, M.J.**, Jiang, D.*, Stephens, S.E., Laughlin, M.E., Jensen, H.K., Uretsky, B., **Timmins, L.H.**, Jensen, M.O., “Experimental Modeling of Coronary Intervention: Towards Computational Simulations,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), Seven Springs, PA, June 2019.
69. **Hurd, E.***, Jiang, D.*, Johnson, C.R., DiBella, E.V.R., **Timmins, L.H.**, “Establishment of an Analysis and Visualization Framework to Interrogate the In Vivo Vascular Biomechanical Environment with 4D Flow CMR,” 16th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering and the 4th Conference on Imaging and Visualization (CMBBE), New York City, NY, August 2019.
70. **Timmins, L.H.**, “Role of Vascular Biomechanics in Coronary Atherosclerosis Progression and Treatment in the Clinical Setting – Can Computational Studies Guide Patient Management?” 56th Annual Technical Meeting – Society of Engineering Sciences, St. Louis, MO, October 2019. (invited)
71. **Timmins, L.H.**, Hurd, E.R.*, Johnson, C.R., DiBella, E.V.R., Oshinski, J.N., “Establishment of A Processing Framework to Comprehensively Evaluate the In Vivo Vascular Fluid Mechanics Environment with 4D Flow Cardiac MRI,” 9th International Biofluid Symposium, Tucson, AZ, Feb. 2020.
72. **Hurd, E.R.***, Oshinski, J.N., **Timmins, L.H.**, “Comparison of Prospective and Retrospective Gated Imaging Protocols for the Acquisition of 4D Flow Imaging Data to Evaluate the Focal Hemodynamics in the Carotid Artery,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), virtual meeting, June 2020.
73. **Jiang, D.***, Zimmerman, B.K., Bean, M.J., Maas, S.A., Jensen, M.O., Ateshian, G.A., **Timmins L.H.**, “Towards the Establishment of Lesion-Specific Stenting Strategies: Validation of a Couple Balloon-Stent Finite Element Framework for Vascular Stent Deployment,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), virtual meeting, June 2020.
74. **Smith, K.A.***, Lin, A.H., Yu, S.M., Weiss, J.A., **Timmins, L.H.**, “Optimization of Staining with Collagen Hybridizing Peptide to Evaluate Mechanical Induces Collagen Damage in the Murine Aorta,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), virtual meeting, June 2020.
75. **Rauff, A.**, **Timmins, L.H.**, Whitaker, R.T., Weiss, J.A., “A Non-Biased Approach to Quantify the 3D Fiber Orientation Distribution in Fibrous Tissues from Image Data,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), virtual meeting, June 2020.
76. **Bean, M.J.**, Jiang, D.*, Manoharan, R., Nowell, A.E., Uretsky, B., Jensen, H.K., **Timmins, L.H.**, Jensen, M.O., “Modeling Percutaneous Intervention of Coronary Artery Bifurcations,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), virtual meeting, June 2020.
77. **Hair, J.B.**, El Sayed, R., **Timmins, L.H.**, Oshinski, J.N., “Effect of Coronary Flow Reserve Values on the Accuracy of Virtual Fractional Flow Reserve Values: Implicates for MRI-based FFR Calculations,” SCMR 24th Annual Scientific Sessions, virtual meeting, February 2021.
78. **Bath, J.**, Wu, H., **Timmins, L.**, Wang, B., “Computational Fluid Dynamics Modeling in Symptomatic and Asymptomatic Carotid Disease,” Society of Clinical Vascular Surgery (SCVS) 48th Annual Symposium, March 2021.

79. Robinson, A., Jiang, D.*, **Timmins, L.**, Cosgriff-Hernandez, E., “Model-directed Design of Kink Resistant Vascular Grafts with High Compliance,” Society for Biomaterials 2021 Annual Meeting, virtual meeting, April 2021.
80. Jiang, D.*, Robinson, A.J., Cosgriff-Hernandez, E.M., **Timmins, L.H.**, “Model-directed Design of Kink Resistant Vascular Grafts with High Compliance,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), virtual meeting, June 2021.
81. Hurd, E.R.*, Mendes, J.K., DiBella, E.V.R., Oshinski, J.N., **Timmins, L.H.**, “Examination of Prospective and Retrospective Gated 4D Flow MRI Acquisitions to Evaluate Fluid Velocities in the Carotid Bifurcation,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), virtual meeting, June 2021.
82. Berggren, C.C.*, Molony, D.S., Samady, H., **Timmins, L.H.**, “Optimization of Perivascular Region Geometry and Material Properties for Application in Patient-Specific Model of a Coronary Artery,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), virtual meeting, June 2021.
83. **Timmins, L.**, Berggren, C.*, Wang, J.*, Jiang, D.*, Molony, D., Samady, H., “Integration of Patient-Specific Computational Modeling Frameworks into the Clinical Setting to Advance the Detection of Coronary Atherosclerosis Progression and Plaque Vulnerability,” 16th U.S. National Congress on Computational Mechanics (USNCCM16), virtual meeting, July 2021.
84. Kwan, E., Dong, J., Thanasitsomboon, A., Roman, O., Hurd, E.*, **Timmins, L.**, Mendes, J., DiBella, W., MacLeod, R., Dossall, D.J., Ranjan, R., “Changes in Flow Dynamics Due to Persistent Atrial Fibrillation in a Chronically Paced Canine Model,” heart Rhythm 2021, virtual meeting, July 2021.
85. **Timmins, L.H.**, “Integration of Patient-Specific Computational Modeling Frameworks into the Clinical Setting of Coronary Artery Disease,” Computing in Engineering Forum, Grainger Institute for Engineering, University of Wisconsin-Madison, virtual meeting, September 2021.
86. Smith, K.A.*, Lin, A.H., Yu, S.M., Weiss, J.A., **Timmins, L.H.**, “Spatial and Temporal Characterization of Collagen Molecular Damage During Atherosclerosis Development,” BMES Annual Fall Meeting, hybrid meeting, Orlando, FL, Oct. 2021.
87. Jiang, D.*, Robinson, A.J., Cosgriff-Hernandez, E.M., **Timmins, L.H.**, “Batch-Process Optimization of Kink-Resistant Vascular Grafts with High Compliance,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), Chesapeake Bay, MD, June 2022.
88. Hurd, E.R.*, Iffrig, E., Oshinski, J.N., **Timmins, L.H.**, “Comparison of Velocity and Flow-based Methods to Calculate Wall Shear Stress from 4D Flow cMRI Data,” Summer Biomechanics, Bioengineering and Biotransport Conference (SB³C), Chesapeake Bay, MD, June 2022.

RESEARCH SUPPORT

Current

R01 HL150608 Timmins (PI) 01/01/20 – 12/31/24

National Institutes of Health

“Biomechanical Indices for Coronary Lesion Rupture Risk and Lesion Prognostication”

The goals of this study are to examine the predictive value of plaque material stiffness in stratifying risk for coronary lesion rupture and evaluate the prognostic value of wall stress for identifying rapidly progression CAD and increase plaque vulnerability.

Budget: \$1,715,060

Role: PI

Completed

18 AIREA 33960590 Jensen (PI) 04/01/18 – 03/31/20

American Heart Association

“Optimizing Treatment of Coronary Bifurcation Lesions”

The goal of this study is to develop, validate, and apply a finite element framework to evaluate a novel interventional balloon and stent delivery system to optimize the treatment of coronary bifurcating lesions.

Budget: \$150,000 (\$73,910 to Timmins)

Role: co-PI

R03 EB018918 Timmins (PI) 07/01/15 – 04/30/18

National Institutes of Health

“3D Stent Reconstruction in Bifurcating Lesions by Fusion of OCT and Micro-CT Data”

The goal of this study was to develop an algorithm to visualize the complete 3D stent structure with respect to target bifurcation lesion to guide optimal interventional treatment strategies.

Budget: \$158,079

Role: PI

URC Award (Biological & Health Sciences) Timmins (PI) 04/01/16 – 03/31/17

Emory University Research Committee

“Development of a Flow Circuit for the Advancement of Phase-contrast MRI in Cardiovascular Disease Diagnosis and Prognosis”

The goal of this study was to develop and construct an MR-compatible mock flow circuit to evaluate the fluid dynamic environment in anatomic arterial phantoms to aid in optimizing PCMR imaging sequences.

Budget: \$30,000

Role: PI

Collaborative Research Travel Grant

Timmins (PI)

10/01/13 – 05/31/14

Burroughs Wellcome Fund

“Examination of Mechano-sensitive Pathways in Murine Model of Thin-cap Fibroatheroma Formation”

The goal of this study was to quantify mechanical environment in animal model of advanced atherosclerosis and correlate local mechanical stimuli with data on lesion cellular content and protein expression.

Budget: \$5,000

Role: PI

Host: Rob Krams, M.D., Ph.D. (Imperial College London)

Robert M. Nerem International Travel Award

Timmins (PI)

06/01/12 – 05/31/13

Petit Institute for Bioengineering & Biosciences; Georgia Institute of Technology

“Development of an Animal-specific Computational Fluid Dynamics Model for Quantification of Surgically Induced Heterogeneous Wall Shear Stress Environment”

The goal of this study was to develop a of fluid-solid interaction computational model for murine model of atherosclerosis.

Budget: \$3,000

Role: PI

Host: Rob Krams, M.D., Ph.D. (Imperial College London)

Postdoctoral Fellowship

Timmins (PI)

07/01/11 – 06/30/13

American Heart Association (Greater Southeast Affiliate)

“Quantification of the Hemodynamic Environment and Structural Alterations in the Progression of Coronary Artery Disease”

The goal of this study was to increase the clinical utility of a novel technique to investigate the focal relationship between WSS and VH-IVUS defined coronary artery disease progression.

Budget: \$90,380

Role: PI

Whitaker International Fellowship

Timmins (PI)

01/01/07 – 12/31/07

Whitaker International Program (Institute for International Education)

“Arterial Elasticity – Histological and Histochemical Analysis”

The goal of this study was to quantify mechanical behavior of layer specific, fiber-enforced arterial tissue via passive mechanical testing and examine arterial fiber orientation via non-linear optical microscopy.

Budget: \$27,000

Role: PI

Host: Stephen E. Greenwald, Ph.D. (Barts and The London School of Medicine and Dentistry)

INVENTIONS

1. Three-Dimensional In Vivo Vascular Stent Reconstruction from Intravascular Imaging Data; disclosed to Technology & Venture Commercialization, University of Utah; Inventors: L.H. Timmins, M.R. Elliott, S. Joshi; Disclosure: 06/2018
2. A Method for Quantifying Wall Shear Stress from Phase Contrast Magnetic Resonance Images of Velocity; disclosed to the Office of Technology Transfer, Emory University; Inventors: J.N. Oshinski, E. Iffrig, L.H. Timmins; Disclosure: 05/2019.

INVITED SEMINARS/SYMPOSIA

1. University of Alabama at Birmingham, Department of Biomedical Engineering, March 2011.
2. Georgia Institute of Technology, Wallace H. Coulter Department of Biomedical Engineering, March 2013.
3. University of Louisville, Department of Bioengineering, November 2013.
4. Imperial College London, Department of Bioengineering, February 2014.
5. Georgia Institute of Technology, Wallace H. Coulter Department of Biomedical Engineering Seminar, February 2014.
6. University of Wisconsin-Madison, Department of Mechanical Engineering, Lindbergh Lecture Series, March 2014.
7. Virginia Commonwealth University, Department of Biomedical Engineering, June 2014.
8. Texas A&M University, Department of Biomedical Engineering, October 2014.
9. Vanderbilt University, Department of Biomedical Engineering, January 2015.
10. Emory University School of Medicine, Department of Surgery, Division of Vascular Surgery Research Seminar, September 2015.
11. Texas A&M University, Department of Biomedical Engineering, January 2016.
12. University of Utah, Department of Bioengineering, January 2016.
13. Imperial College London, Department of Bioengineering, February 2016.
14. Colorado State University, Department of Mechanical Engineering, February 2016.
15. University of Arkansas, Department of Biomedical Engineering, October 2016.
16. University of Utah, Utah Vascular Research Laboratory Colloquium Series, October 2018.
17. Virginia Commonwealth University, Department of Mechanical Engineering, March 2019.

18. University of Utah, Nora Eccles Treadwell Cardiovascular Research and Training Institute, September 2019.
19. Texas A&M University, Department of Biomedical Engineering, November 2021.
20. University of Nebraska-Omaha, Department of Biomechanics, February 2022.

PROFESSIONAL AND ACADEMIC SERVICE

National/International

Grant Reviewer (Study Sections)

- American Heart Association: Bioeng BSc 1 (10/2016, 4/2017, 1/2018, 9/2018, 3/2021)
- National Institutes of Health: ZRG1 DTCS-A (81) (9/2016, 5/2017), ZHLI CSR-P (F1) (10/2017), ZHLI CCT-X(C1) (3/2018), ZHLI CCT-X(C2) (3/2018), ZHLI CSR-Q (F1) (11/2018)
- National Science Foundation: GFRP review panel (1/2020), ad hoc reviewer for Biomechanics and Mechanobiology program (2/2021)
- Technology Foundation STW (Netherlands): (9/2015, 4/2018)

Journal Reviewer. Annals of Biomedical Engineering, AJP: Heart and Circulatory Physiology, ASME Journal of Biomechanical Engineering, ASME Journal of Medical Device, Atherosclerosis, Biomechanics and Modeling in Mechanobiology, Cardiovascular Engineering and Technology, IEEE Transactions on Medical Imaging, JACC: Cardiovascular Interventions, Journal of Biomechanics, Journal of the Royal Society Interface, Medical and Biological Engineering and Computing, Medical Engineering and Physics.

Professional Memberships. American Society for Engineering Education (2017 – present), American Society of Mechanical Engineers (ASME, 2010 – present), Biomedical Engineering Society (BMES, 2010 – present), American Heart Association (2016 – present)

Exhibits Chair. Summer Biomechanics, Bioengineering, and Biotransport Conference (SB³C), 2020 and 2021.

CV Fluid Mechanics Theme Leader. Fluid Technical Committee, ASME Bioengineering Division, (2020 – present).

Conference Session Organizer, Chair/Co-Chair. ASME SBC: 2011, 2013; BMES: 2016-2018; CMBBE 2019; International Symposium on Biomechanics in Vascular Biology and Cardiovascular Disease: 2014, 2016, 2018; SB³C: 2015-2017, 2019; World Congress of Biomechanics: 2018.

Consulting. Martin | Baughman Law Firm, 2020 – present; Boston Scientific, 2009

University of Utah

Department

- Member,** Graduate Committee (2016 – present)
- Member,** Plagiarism Committee (2016 – present)
- Member,** Undergraduate Committee (2018 – present)
- Chair,** Biomechanics (Graduate) Track (2020 – 2021)
- Co-Chair,** Biomechanics (Graduate) Track (2021 – present)

University

Member, Fluorescence Microscope Core Facility Oversight Committee (2017 – 2019)

TEACHING

| Year | Subject Number and Title | | Institution | Enrollment | Evaluations |
|-------------|---------------------------------|--|--------------------|-------------------|--------------------|
| Fall 2011 | BMED 1300: | Problems in Biomedical Engineering | Georgia Tech | 7 | n/a |
| Spring 2012 | BMED 1300: | Problems in Biomedical Engineering | Georgia Tech | 8 | n/a |
| Fall 2012 | BMED 1300: | Problems in Biomedical Engineering | Georgia Tech | 8 | 4.71/5.0 |
| Summer 2014 | BMED 3300 | Biotransport | Georgia Tech | 34 | n/a |
| Spring 2017 | BIOEN 6480 | Biomechanics Research | U. Utah | 10 | 5.81/6.0* |
| Fall 2017 | BIOEN 4250 | Biomechanics I | U. Utah | 67 | 5.11/6.0 |
| Fall 2017 | BIOEN 6480 | Biomechanics Research | U. Utah | 10 | 5.75/6.0* |
| Spring 2018 | BIOEN 6480 | Biomechanics Research | U. Utah | 10 | 5.70/6.0 |
| Fall 2018 | BIOEN 4250 | Biomechanics I | U. Utah | 74 | 5.74/6.0 |
| Fall 2018 | BIOEN 6480 | Biomechanics Research | U. Utah | 10 | 5.80/6.0 |
| Spring 2019 | BIOEN 5900/6480 | Biomechanics Research | U. Utah | 10 | 5.98/6.0 |
| Fall 2019 | BME 4250 | Biomechanics I | U. Utah | 108 | 5.50/6.0 |
| Fall 2019 | BME 6480 | Biomechanics Research | U. Utah | 10 | 5.90/6.0 |
| Spring 2020 | BME 5900/6900 | Biofluid Mechanics | U. Utah | 14 | 5.98/6.0 |
| Spring 2020 | BME 5900/6480 | Biomechanics Research | U. Utah | 15 | 5.41/6.0 |
| Fall 2020 | BME 4250 | Biomechanics I | U. Utah | 90 | 5.60/6.0 |
| Fall 2020 | BME 5900/6480 | Biomechanics Research | U. Utah | 12 | 5.89/6.0 |
| Spring 2021 | BME 5280/6480 | Biomechanics Research | U. Utah | 14 | - |
| Fall 2021 | BME 4250 | Biomechanics I (co-taught w/ J. Weiss) | U. Utah | 125 | |
| Fall 2021 | BME 5280/6280 | Biomechanics Research | U. Utah | 9 | |
| Spring 2022 | BME 5900/6900 | Biofluid Mechanics | U. Utah | 18 | |

MENTORING

Graduate Students Supervised

Mark Elliott, “Establishment of an Automated Algorithm Utilizing Optical Coherence Tomography Imaging to Reconstruct the 3D Deformed Stent Geometry”, M.S. Thesis, Department of Biomedical Engineering, University of Utah, Sept. 2016 – May 2018

Kelly Smith, Ph.D. candidate, Department of Biomedical Engineering, University of Utah, Dec. 2016 – present

Elliot Hurd, Ph.D. candidate, Department of Biomedical Engineering, University of Utah, Jan. 2018 – present

David Jiang, Ph.D. candidate, Department of Biomedical Engineering, University of Utah, May 2019 – present

Yifan (Jack) Wang, Ph.D. candidate, Department of Biomedical Engineering, University of Utah, August 2019 – present

Caleb Berggren, Ph.D. candidate, Department of Biomedical Engineering, University of Utah, January 2020 – present

Undergraduate Senior Theses Supervised

Stuart Loertscher, “Development of a Finite Element Model for Patient-Specific Coronary Arteries in FEBio,” Department of Bioengineering, University of Utah, 2016 – 2017.

David Jiang, “Design and Construction of a Magnetic Resonance Imaging Compatible Physiologic Flow Circuit,” Department of Biomedical Engineering, University of Utah, 2017 – 2018.

Dan Kim, “Curvature Change in Vessel After Implantation of Flow-Diverting Stent for Treatment of Intracranial Aneurysm,” Department of Biomedical Engineering, University of Utah, 2017 – 2018.

Anna Hardy, “A Semi-Automatic Program for Muscle Histology Image Analysis to Evaluate Animal Models of Peripheral Artery Disease,” Department of Biomedical Engineering, University of Utah, 2019 – 2020.

Undergraduate Research Students Supervised

Jillian Lee, Emory Pediatric Bioengineering Summer (PERSE) Program, Summer Undergraduate Research Experience (SURE), Emory University, May – Aug. 2014

Kevin Lewis, Department of Radiology & Imaging Sciences, Emory University School of Medicine, May – Aug. 2015

Stuart Loertscher, Department of Bioengineering, University of Utah, Dec. 2016 – May 2018

Billy Jeon (*visiting student from Rice University*), Summer Program for Undergraduate Research (SPUR), University of Utah, May – Aug. 2017

Erika Kvaalem-Soto (*visiting student from Universidad Carlos III de Madrid*), Department of Bioengineering, University of Utah, Dec. 2017 – May 2018

David Jiang, Department of Biomedical Engineering, University of Utah, Oct. 2016 – May 2019

Dan Kim, Department of Biomedical Engineering, University of Utah, Nov. 2016 – May 2019

Michael Keyser, Departments of Mathematics and Electrical and Computer Engineering, University of Utah, Dec. 2018 – Sept. 2021

Anna Hardy, Department of Biomedical Engineering, University of Utah, Feb. 2019 – Aug. 2020

Alex Stevens, Department of Mechanical Engineering, University of Utah, Feb. 2020 – present

Dissertation/Thesis Committee Member (Degree, Department, University, Year): Sean Finley (M.S., BME, U. Utah, 2018), Michael Herron (M.S., BME, U. Utah, 2019), Kyle Burk (Ph.D., BME, U. Utah, 2019), Carl Tams (Ph.D., BME, U. Utah, 2019), Allie Kachel (M.S., BME, U. Utah, 2019), Lindsay Schuring (M.S., BME, U. Utah, 2019), Sara Johnson (Ph.D., BME, U. Utah, 2019), Azmi Ahmad (Ph.D., BME, U. Utah, 2019), Jesse Nelson (M.S., BME, U. Utah, 2019), Genesis Moreno (M.S., BME, U. Utah, 2020), John Nelson (M.S., BME, U. Utah, 2020), Jackson Hair (Ph.D., BME, Georgia Tech/Emory U., 2020), Isabelle Falzon (M.S., BME, U. Utah, 2020), Blake Zimmerman (Ph.D., BME, U. Utah, 2020), Harley Austin (M.S., BME, U. Utah, 2021), Brian Zenger (Ph.D., BME, U. Utah, 2021), Ayesha Khan (M.S., BME, U. Utah, 2021), Klevis Aliaj (Ph.D., BME, U. Utah, 2021), Farshad Mogharrabi (M.S., ME EN, U. Utah, 2021), Stefan Niederauer (Ph.D., BME, U. Utah, 2021), Alex Allan (M.S., BME, U. Utah, 2021), Hema Sulkar (Ph.D., U. Utah, 2021), Molly Streiff (Ph.D., U. Utah, 2021), Kenji Huff (M.S., BME, U. Utah, 2022)