

Rob W.

3D Biomedical Engineer, Radiology - Diagnostic Radiology

Bio

CURRENT ROLE AT STANFORD

Designing custom surgical models and patient-specific implants for SHC and LPCH!

Publications

PUBLICATIONS

- **Quantitative biomechanical optimization of neochordal implantation location on mitral leaflets during valve repair.** *JTCVS techniques*
Pandya, P. K., Wilkerson, R. J., Imbrie-Moore, A. M., Zhu, Y., Marin-Cuartas, M., Park, M. H., Woo, Y. J.
2022; 14: 89-93
- **Biomechanical Engineering Analysis of Pulmonary Valve Leaflet Hemodynamics and Kinematics in the Ross Procedure.** *Journal of biomechanical engineering*
Zhu, Y., Wilkerson, R., Pandya, P., Mullis, D., Wu, C., Madira, S., Marin-Cuartas, M., Park, M. H., Imbrie-Moore, A., Woo, Y. J.
2022
- **Efficacy of a Novel Posterior Leaflet Repair Device to Treat Secondary Mitral Regurgitation Using an Ex Vivo Heart Model** *STRUCTURAL HEART-THE JOURNAL OF THE HEART TEAM*
Kapadia, S. R., Harb, S. C., Hovest, T. J., Imbrie-Moore, A. M., Wilkerson, R. J., Woo, Y., Navia, J. L.
2022; 6 (1)
- **An axis-specific mitral annuloplasty ring eliminates mitral regurgitation allowing mitral annular motion in an ovine model.** *Communications medicine*
Zhu, Y., Imbrie-Moore, A. M., Park, M. H., Cork, T. E., Yajima, S., Wilkerson, R. J., Tran, N. A., Marin-Cuartas, M., Mullis, D. M., Baker, S. W., Tada, Y., Ueyama, T., Leipzig, et al
2025; 5 (1): 40
- **Large Animal Translational Validation of 3 Mitral Valve Repair Operations for Mitral Regurgitation Using a Mitral Valve Prolapse Model: A Comprehensive In Vivo Biomechanical Engineering Analysis.** *Circulation. Cardiovascular interventions*
Zhu, Y., Yajima, S., Park, M. H., Venkatesh, A., Stark, C. J., Tran, N. A., Walsh, S. K., Ethiraj, S., Wilkerson, R. J., Lin, L. E., Lee, S. H., Gates, K. Y., Arthur, et al
2024; 17 (4): e013196
- **A 3D-Printed Externally Adjustable Symmetrically Extensible (EASE) Aortic Annuloplasty Ring for Root Repair and Aortic Valve Regurgitation.** *Cardiovascular engineering and technology*
Zhu, Y., Park, M. H., Wilkerson, R. J., Joo, H. C., Pandya, P. K., Woo, Y. J.
2024
- **Chordal force profile after neochordal repair of anterior mitral valve prolapse: An ex vivo study.** *JTCVS open*
Yajima, S., Zhu, Y., Stark, C. J., Wilkerson, R. J., Park, M. H., Stefan, E., Woo, Y. J.
2023; 15: 164-172
- **An analytical, mathematical annuloplasty ring curvature model for planning of valve-in-ring transcatheter mitral valve replacement.** *JTCVS techniques*
Park, M. H., Marin-Cuartas, M., Sellke, M., Pandya, P. K., Zhu, Y., Wilkerson, R. J., Holzhey, D. M., Borger, M. A., Woo, Y. J.
2023; 20: 45-54

- **Anterior Pericardial Patch Augmentation Repair and Neochord Implantation for Rheumatic Mitral Valves.** *Annals of thoracic surgery short reports*
Zhu, Y., Yajima, S., Wilkerson, R. J., Park, M. H., Kim, J. Y., Pandya, P. K., Woo, Y. J.
2023; 1 (2): 302-306
- **Ex Vivo Modeling of Atrioventricular Valve Mechanics in Single Ventricle Physiology.** *Annals of biomedical engineering*
Moye, S. C., Kidambi, S., Lee, J. Y., Cowles, T. H., Gilligan-Steinberg, S. D., Bryan, A. Y., Wilkerson, R., Woo, Y. J., Ma, M. R.
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- **Biomechanical evaluation of aortic regurgitation from cusp prolapse using an ex vivo 3D-printed commissure geometric alignment device.** *Journal of cardiothoracic surgery*
Zhu, Y., Park, M. H., Imbrie-Moore, A., Wilkerson, R., Madira, S., Woo, Y. J.
2022; 17 (1): 303
- **Native and Post-Repair Residual Mitral Valve Prolapse Increases Forces Exerted on the Papillary Muscles: A Possible Mechanism for Localized Fibrosis?** *Circulation. Cardiovascular interventions*
Park, M. H., van Kampen, A., Melnitchouk, S., Wilkerson, R. J., Nagata, Y., Zhu, Y., Wang, H., Pandya, P. K., Morningstar, J. E., Borger, M. A., Levine, R. A., Woo, Y. J.
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- **Force Profiles of Single Ventricle Atrioventricular Leaflets in Response to Annular Dilation and Leaflet Tethering.** *Seminars in thoracic and cardiovascular surgery*
Kidambi, S., Moye, S. C., Lee, J., Cowles, T. H., Strong, E. B., Wilkerson, R., Paulsen, M. J., Woo, Y. J., Ma, M. R.
2022
- **A novel accelerated fatigue testing system for pulsatile applications of cardiac devices using widely translatable cam and linkage-based mechanisms.** *Medical engineering & physics*
Park, M. H., Imbrie-Moore, A. M., Zhu, Y., Sellke, M., Marin-Cuartas, M., Wilkerson, R. J., Woo, Y. J.
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- **A novel accelerated fatigue testing system for pulsatile applications of cardiac devices using widely translatable cam and linkage-based mechanisms** *MEDICAL ENGINEERING & PHYSICS*
Park, M. H., Imbrie-Moore, A. M., Zhu, Y., Sellke, M., Marin-Cuartas, M., Wilkerson, R. J., Woo, Y.
2022; 109
- **The Critical Biomechanics of Aortomitral Angle and Systolic Anterior Motion: Engineering Native Ex Vivo Simulation.** *Annals of biomedical engineering*
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- **A Novel Rheumatic Mitral Valve Disease Model with Ex Vivo Hemodynamic and Biomechanical Validation.** *Cardiovascular engineering and technology*
Park, M. H., Pandya, P. K., Zhu, Y., Mullis, D. M., Wang, H., Imbrie-Moore, A. M., Wilkerson, R., Marin-Cuartas, M., Woo, Y. J.
2022
- **Biomechanical analysis of neochordal repair error from diastolic phase inversion of static left ventricular pressurization.** *JTCVS techniques*
Park, M. H., Marin-Cuartas, M., Imbrie-Moore, A. M., Wilkerson, R. J., Pandya, P. K., Zhu, Y., Wang, H., Borger, M. A., Woo, Y. J.
2022; 12: 54-64
- **Efficacy of a Novel Posterior Leaflet Repair Device to Treat Secondary Mitral Regurgitation Using an Ex Vivo Heart Model.** *Structural heart : the journal of the Heart Team*
Kapadia, S. R., Harb, S. C., Hovest, T. J., Imbrie-Moore, A. M., Wilkerson, R. J., Woo, Y. J., Navia, J. L.
2022; 6 (1): 100023
- **Ex vivo biomechanical analysis of flexible versus rigid annuloplasty rings in mitral valves using a novel annular dilation system.** *BMC cardiovascular disorders*
Zhu, Y., Imbrie-Moore, A. M., Wilkerson, R. J., Paulsen, M. J., Park, M. H., Woo, Y. J.
2022; 22 (1): 73
- **Biomechanical engineering analysis of an acute papillary muscle rupture disease model using an innovative 3D-printed left heart simulator.** *Interactive cardiovascular and thoracic surgery*

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- Marin-Cuartas, M., Zhu, Y., Imbrie-Moore, A. M., Park, M. H., Wilkerson, R. J., Leipzig, M., Pandya, P. K., Paulsen, M. J., Borger, M. A., Woo, Y. J.
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- **Biomechanical engineering comparison of four leaflet repair techniques for mitral regurgitation using a novel 3-dimensional-printed left heart simulator.** *JTCVS TECHNIQUES*
Paulsen, M. J., Cuartas, M., Imbrie-Moore, A., Wang, H., Wilkerson, R., Farry, J., Zhu, Y., Ma, M., MacArthur, J. W., Woo, Y.
2021; 10: 244-251
 - **Biomechanical engineering analysis of commonly utilized mitral neochordae.** *JTCVS open*
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2021; 8: 263-275
 - **Biomechanical engineering comparison of four leaflet repair techniques for mitral regurgitation using a novel 3-dimensional-printed left heart simulator.** *JTCVS techniques*
Paulsen, M. J., Cuartas, M. M., Imbrie-Moore, A., Wang, H., Wilkerson, R., Farry, J., Zhu, Y., Ma, M., MacArthur, J. W., Woo, Y. J.
2021; 10: 244-251
 - **Ex Vivo Model of Ischemic Mitral Regurgitation and Analysis of Adjunctive Papillary Muscle Repair.** *Annals of biomedical engineering*
Imbrie-Moore, A. M., Zhu, Y., Bandy-Vizcaino, T., Park, M. H., Wilkerson, R. J., Woo, Y. J.
2021
 - **From hardware store to hospital: a COVID-19-inspired, cost-effective, open-source, in vivo-validated ventilator for use in resource-scarce regions.** *Bio-design and manufacturing*
Park, M. H., Zhu, Y., Wang, H., Tran, N. A., Jung, J., Paulsen, M. J., Imbrie-Moore, A. M., Baker, S., Wilkerson, R., Marin-Cuartas, M., Mullis, D. M., Woo, Y. J.
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 - **Exvivo biomechanical analysis of the Ross procedure using the modified inclusion technique in a 3-dimensionally printed left heart simulator.** *The Journal of thoracic and cardiovascular surgery*
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