Stanford

Zachary Aaron Sexton

Postdoctoral Scholar, Cardiology

Bio

BIO

Focused on understanding cardiovascular physiology, disease, and tissue engineering through stem cell biology and hemodynamics. Specializes in 3D extrusion bioprinting and computational fluid dynamics (though an open-source software platform SimVascular) to improve tissue engineering strategies for the successful development of cardiac tissues for disease modeling and therapeutic solutions.

HONORS AND AWARDS

- Bioengineering Teaching Assistant Award, Department of Bioengineering, Stanford School of Engineering (2019-2020)
- National Science Foundation Graduate Research Fellowship, National Science Foundation (2018--Present)
- Alexander J. Taylor Sr. Award (Outstanding Senior for the Graduating Class of 2018), University of Delaware (2018)
- Goldwater Scholarship Honorable Mention, Barry Goldwater Scholarship & Excellence in Education Foundation (2017)

PROFESSIONAL EDUCATION

- Bachelor of Science, University of Delaware (2018)
- Doctor of Philosophy, Stanford University , BIOE-PHD (2024)
- Master of Science, Stanford University , BIOE-MS (2021)
- Bachelor of Engineering, University of Delaware , Biomedical Engineering (2018)
- Bachelor of Arts and Science, University of Delaware , Public Policy Analysis (2018)

STANFORD ADVISORS

- Alison Marsden, Postdoctoral Faculty Sponsor

Research & Scholarship

LAB AFFILIATIONS

- Alison Marsden, Cardiovascular Biomechanics Computation Lab (6/22/2019)
- Sean Wu, Wu Lab (6/22/2019)

Publications

PUBLICATIONS

- **Rapid Model-Guided Design of Organ-Scale Synthetic Vasculature for Biomanufacturing.** *Science*
  Sexton, Z. A., Rütsche, D., Herrmann, J. E., Hudson, A. R., Sinha, S., Du, J., Shiwarski, D. J., Masaltseva, A., Solberg, F. S., Pham, J., Szafron, J. M., Wu, S. M., Feinberg, et al

2025; 388 (6752): 1198-1204

- **Personalized coronary and myocardial blood flow models incorporating CT perfusion imaging and synthetic vascular trees.** *Npj imaging*
  Menon, K., Khan, M. O., Sexton, Z. A., Richter, J., Nguyen, P. K., Malik, S. B., Boyd, J., Nieman, K., Marsden, A. L.
  2024; 2 (1): 9
- **Computational approaches for mechanobiology in cardiovascular development and diseases.** *Current topics in developmental biology*
  Brown, A. L., Sexton, Z. A., Hu, Z., Yang, W., Marsden, A. L.
  2024; 156: 19-50
- **Personalized coronary and myocardial blood flow models incorporating CT perfusion imaging and synthetic vascular trees.** *medRxiv : the preprint server for health sciences*
  Menon, K., Khan, M. O., Sexton, Z. A., Richter, J., Nieman, K., Marsden, A. L.
  2023
- **Rapid model-guided design of organ-scale synthetic vasculature for biomanufacturing.** *ArXiv*
  Sexton, Z. A., Hudson, A. R., Herrmann, J. E., Shiwarski, D. J., Pham, J., Szafron, J. M., Wu, S. M., Skylar-Scott, M., Feinberg, A. W., Marsden, A.
  2023
- **Time From Authorization by the US Food and Drug Administration to Medicare Coverage for Novel Technologies.** *JAMA health forum*
  Sexton, Z. A., Perl, J. R., Saul, H. R., Trotsyuk, A. A., Pietzsch, J. B., Ruggles, S. W., Nikolov, M. C., Schulman, K. A., Makower, J.
  2023; 4 (8): e232260
- **A matched-pair case control study identifying hemodynamic predictors of cerebral aneurysm growth using computational fluid dynamics.** *Frontiers in physiology*
  Weiss, A. J., Panduro, A. O., Schwarz, E. L., Sexton, Z. A., Lan, I. S., Geisbush, T. R., Marsden, A. L., Telischak, N. A.
  2023; 14: 1300754
- **In vitro comparison of everting vs. non-everting suture techniques for the implantation of a supra-annular biological heart valve.** *Journal of thoracic disease*
  Puluca, N., Münsterer, A., Prinzing, A., Sexton, Z. A., Lange, R., Meyer-Saraei, R., Scharfschwerdt, M.
  2020; 12 (5): 2443-2449
- **Connecting Theoretical Concepts to Physical Phenomena Using 3-D-printed Microfluidic Devices** *ASEE Annual Conference & Exposition*
  Rooney, S. ., Sariano, P. A., Sexton, Z. A., Stewart, W. G., Guidry, K. R., Gleghorn, J.
  American Society for Engineering Education Peer.2018: 17