

Sunny S. Lou, M.D. Ph.D.

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EDUCATION

2020- 2022	Barnes Jewish Hospital / Washington University Fellowship, Adult Cardiothoracic Anesthesiology	St Louis, MO
2017- 2022	Barnes Jewish Hospital / Washington University Residency, Anesthesiology Internship, Anesthesiology	St Louis, MO
2009- 2017	Stanford University School of Medicine M.D., Ph.D.	Stanford, CA
2005- 2009	Massachusetts Institute of Technology S.B., Biology	Cambridge, MA

LICENSES AND CERTIFICATION

2017- present	Missouri State Medical License
2017- present	BLS/ACLS
2017- present	ATLS
2018- present	PALS

HONORS AND AWARDS

2021	Team Award for Quality Improvement, Periop Blood Mgmt, BJC Healthcare
2020	Awardee , Washington University Big Ideas Healthcare Innovation competition
2019	Top 10% , American Board of Anesthesiology BASIC Exam
2009	Phi Beta Kappa
2008	Barry M. Goldwater Scholarship

RESEARCH

2020- present	Postdoctoral Research , Washington University Dept of Anesthesiology Mentor: Thomas Kannampallil, PhD Personalized transfusion risk prediction using machine learning to guide presurgical blood orders. Digital phenotyping using electronic health record audit log to measure physician burnout, cognitive load, and medication errors.
Jan-Mar 2017	Research Fellow , Google Health Mentor: Ming Jack Po, MD PhD Exploratory product design for the application of artificial intelligence to medicine. Cleanup and harmonization of electronic health record data.
2010-2017	Doctoral Research , Stanford University Dept of Biochemistry Mentor: Julie Theriot, PhD Identified novel biochemical and biophysical mechanisms for large-scale coordination of single-cell migration.

PUBLICATIONS

S.S. Lou, H. Liu, C. Lu, T.S. Wildes, B.L. Hall, T. Kannampallil (*in press*) Personalized surgical transfusion risk prediction using machine learning to guide preoperative type and screen orders. *Anesthesiology*. doi: 10.1097/ALN.0000000000004139

S.S. Lou, D. Lew, D.R. Harford, C. Lu, B.A. Evanoff, J.G. Duncan, T. Kannampallil (*accepted*) Temporal associations between EHR-derived workload, burnout, and errors: a prospective cohort study. *Journal of General Internal Medicine*.

S.S. Lou, H. Liu, B.C. Warner, D. Harford, C. Lu, T. Kannampallil (2022) Predicting physician burnout using clinical activity logs: model performance and lessons learned. *Journal of Biomedical Informatics*. Online ahead of print. doi: 10.1016/j.jbi.2022.104015

C.W. Goss, J.G. Duncan, **S.S. Lou**, K.J. Holzer, B.A. Evanoff, T. Kannampallil (2022) Effects of persistent exposure to COVID-19 on mental health outcomes among trainees: a longitudinal survey study. *Journal of General Internal Medicine*. Jan 22; doi: 10.1007/s11606-021-07350-y

K.J. Holzer, **S.S. Lou**, C.W. Goss, J. Strickland, B.A. Evanoff, J.G. Duncan, T. Kannampallil (2021) Effect of changes in EHR use during COVID-19 on physician trainee mental health. *Applied Clinical Informatics*, Jun 02, doi: 10.1055/s-0041-1731000

S.S. Lou, C.W. Goss, B.A. Evanoff, J.G. Duncan, T. Kannampallil (2021) Risk factors associated with physician trainee concern over missed educational opportunities during the COVID-19 pandemic, *BMC Medical Education*. Apr 17, doi: 10.1186/s12909-021-02665-0

S.S. Lou, M. Bethel, A.B. Reidy, M.A. Helwani (2021) Tracheobronchial Trauma from Double Lumen Tube Placement in Patients Undergoing Lung Transplantation, *Journal of Cardiothoracic and Vascular Anesthesia*. Apr 19, doi: 10.1053/j.jvca.2021.04.020

S.S. Lou, A.S. Kennard, E.F. Koslover, E. Gutierrez, A. Groisman, J.A. Theriot. (2021) Elastic wrinkling of keratocyte lamellipodia driven by myosin-induced contractile stress, *Biophysical Journal*, May 4;120(9):1578-1591. doi: 10.1016/j.bpj.2021.02.022

T. Kannampallil, J. Abraham, **S.S. Lou**, P.R.O. Payne (2020) Conceptual considerations for using EHR-based activity logs to measure clinician burnout and its effects. *Journal of the American Medical Informatics Association*, Dec 22. doi: 10.1093/jamia/ocaa305

M.J. Arcario, **S.S. Lou**, P.N. Taylor, S.H. Gregory (2020) Sinus of Valsalva Aneurysms: A Review with Perioperative Considerations. *Journal of Cardiothoracic and Vascular Anesthesia*, Dec 14. doi: 10.1053/j.jvca.2020.12.016

T.Y. Tsai, S.R. Collins, C.K. Chan, A. Hadjitheodorou, P.Y. Lam, **S.S. Lou**, H.W. Yang, J. Jorgensen, F. Ellett, D. Irimia, M.W. Davidson, R.S. Fischer, A. Huttenlocher, T. Meyer, J.E. Ferrell Jr, J.A. Theriot (2019) Efficient Front-Rear Coupling in Neutrophil Chemotaxis by Dynamic Myosin II Localization. *Developmental Cell*, Apr 22;49(2):189-205.e6. doi: 10.1016/j.devcel.2019.03.025.

E.L. Barnhart, J. Allard, **S.S. Lou**, A. Mogilner, J.A. Theriot (2017) Adhesion dependent wave generation in crawling cells. *Current Biology*, Jan 9; (27)1:27-38. doi: 10.1016/j.cub.2016.11.011

S.S. Lou, A. Diz-Munoz, O.D. Weiner, D.A. Fletcher, J.A. Theriot (2015) Myosin light chain kinase regulates cell polarization independently of membrane tension or Rho kinase. *Journal of Cell Biology*, Apr 27;209(2):275-88. doi: 10.1083/jcb.201409001.

INVITED TALKS

S.S. Lou, H. Liu, S. Kim, D. Lew, D.R. Harford, B.C. Warner, C. Lu, T. Kannampallil (2022) Audit logs for the measurement of physician workload, cognitive burden, and burnout. *National Research Network for EHR-Use Measures* (Invited seminar)

S.S. Lou, D. Lew, H. Liu, D.R. Harford, B.C. Warner, C. Lu, T. Kannampallil (2021) Integrating real-time clinical activity for characterizing burnout and errors. *American Medical Association EHR-Use Research Summit* (Invited seminar)

S.S. Lou, D. Lew, D.R. Harford, C. Lu, B.E. Evanoff, J.G. Duncan, T. Kannampallil (2021) A longitudinal study of burnout and clinical workload measured with electronic health record audit logs. *American Medical Informatics Association Annual Symposium* (Invited oral presentation)

S.S. Lou, J.A. Theriot (2014) Myosin light chain kinase activity regulates the number of leading edges in zebrafish embryonic keratocytes. *Biophysical Society Abstracts*, 106, 2:1, 1236-Plat; doi: 10.1016/j.bpj.2013.11.1429. (Invited oral presentation)

RESEARCH SUPPORT

T32 GM108539

NIH/NIGMS, Role: Trainee
Training Program in Anesthesiology Research

10/20/2020-10/20/2022
Annual Directs: \$447,060

Big Ideas Healthcare Innovation Competition

Washington University, Role: PI
Integrating real-time clinical activity for characterizing burnout (IGNITE)

07/01/2020-12/31/2021
Annual Directs: \$50,000

SERVICE

2021- present	Member , Barnes Jewish Hospital Perioperative Blood Management Committee
2021- present	Ad hoc reviewer , <i>Anesthesiology</i> , <i>Journal of Biomedical Informatics</i> .

TEACHING EXPERIENCE

2014	Teaching Assistant for MCP 222, a graduate course in light microscopy, Stanford University.
2010-2012	Teaching Assistant for INDE 216, a first year medical school course in cell biology and histology, Stanford University.
2008	Instructor , MIT Educational Studies Program, developed and taught a short course on cancer biology for high school students.
2007	Teaching Assistant for 5.07 Biochemistry, Massachusetts Institute of Technology.