

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL AND COLLEGE OF ENGINEERING
DEPARTMENT OF BIOMEDICAL ENGINEERING
MEDICAL SCHOOL
DEPARTMENT OF ANESTHESIOLOGY

Scott F. Lempka, Ph.D., assistant professor of biomedical engineering, Department of Biomedical Engineering, Medical School and College of Engineering, and assistant professor of anesthesiology, Department of Anesthesiology, Medical School, is recommended for promotion to associate professor of biomedical engineering, with tenure, Department of Biomedical Engineering, Medical School and College of Engineering, and associate professor of anesthesiology, without tenure, Department of Anesthesiology, Medical School.

Academic Degrees:

Ph.D.	2010	Case Western Reserve University
M.S.	2007	Case Western Reserve University
B.S.	2004	Saint Louis University

Professional Record:

2018-present	Assistant Professor of Anesthesiology, University of Michigan
2017-present	Assistant Professor of Biomedical Engineering, University of Michigan
2015-2016	Adjunct Assistant Professor of Biomedical Engineering, Case Western Reserve University
2011-2011	Visiting Assistant Professor of Neuroscience, Oberlin College

Summary of Evaluation:

Teaching: Dr. Lempka is a dedicated teacher and mentor. He instructs learners at various levels including undergraduates, graduate students, doctoral trainees, and post-doctoral fellows. Dr. Lempka is the lead instructor of BME 417 (Electrical biophysics) and also contributes to the College of Engineering and Medical School including BIOMEDE 527 (Current Topics in Neuromodulation) and NSCI 525 (Introduction to Pain). He is an active research mentor, having trained several Ph.D. and M.S. students, post-doctoral scholars, undergraduates, and medical students. He has also served on several dissertation committees and served as a Postbac Research Education Program (PREP) mentor and a Michigan Institute for Clinical and Health Research summer research mentor. Overall, Dr. Lempka's classroom instruction and his research mentorship have demonstrated a dedication to excellence in teaching at the University of Michigan.

Research: Dr. Lempka's research interests are in the areas of computational modeling of neuromodulation and neural engineering. One of the goals of his lab is to innovate new technologies that improve outcomes in using neurostimulation to treat chronic pain by characterizing the therapeutic mechanisms of neurostimulation therapies for chronic pain management. Dr. Lempka's lab also focuses on spinal cord stimulation with the goal of further investigating the mechanisms of action of current and novel computational models and experimental techniques to understand the effects of electrical stimulation on neural tissue and the factors that affect the quality of neural recordings. He has current funding from the National Institutes of Health (NIH) and manages several current industry grants with large and small neuromodulation companies such as Medtronic and Abbot Laboratories. He is the co-principal investigator of an NIH R01 where he is leading a computational model of spinal cord stimulation to restore sensory sensation for people with amputations or paralysis. He is a co-

investigator with effort on a current NIH grant that studies the pudendal nerve as a target for neuromodulation to treat urinary incontinence. Thus, he has developed robust funding and continues to seek new funding. He has published a total of 50 peer-reviewed publications and four book chapters.

Recent Significant Publications:

- Rogers ER, Zander HJ, Lempka SF, “Neural recruitment during conventional, burst, and 10-kHz spinal cord stimulation for pain,” *The Journal of Pain* 2022 Mar;23(3):434-449.
- Jones MG, Rogers ER, Harris JP, Sullivan A, Ackermann DM, Russo M, Lempka SF, McMahon SB, “Neuromodulation using ultra low frequency current waveform reversibly blocks axonal conduction and chronic pain,” *Science Translational Medicine* 2021 Aug 25;13(608):eabg9890.
- Sankarasubramanian V, Chiravuri S, Mirzakhali E, Anaya CJ, Scott JR, Brummett CM, Clauw DJ, Patil PG, Harte SE, Lempka SF, “Quantitative sensory testing of spinal cord and dorsal root ganglion stimulation in chronic pain patients,” *Neuromodulation* 2021 Jun;24(4):672-684.
- Mirzakhali E, Barra B, Capogrosso M, Lempka SF, “Biophysics of temporal interference stimulation,” *Cell Systems* 2020 Dec 16;11(6):557-572.
- Zander HJ, Graham RD, Anaya CJ, Lempka SF, “Anatomical and technical factors affecting the neural response to epidural spinal cord stimulation,” *Journal of Neural Engineering* 2020 Jun 12;17(3):036019.

Service: Dr. Lempka has a strong record of service. He has participated as an ad hoc fellowship or grant reviewer for the Department of Veteran Affairs and the National Institutes of Health. At the department level, Dr. Lempka serves as a member of the Biointerfaces Institute Innovation Fellowship Steering Committee and Graduate School Admissions Committee. Nationally, he was an abstract reviewer for the Biomedical Engineering Society Annual Meeting. Internationally, he is a member of both the Scientific Program Committee and Abstract Review Committee for the North American Neuromodulation Society Meeting. He is a strong supporter of undergraduate and graduate research programs on campus and was a panelist for the M-HEAL and a member of the Biomedical Engineering Team where he helped find strategies to support inclusive climates and student success in STEM departments. Dr. Lempka has also served on 14 dissertation/qualifying exam committees (outside of his own students) from Biomedical Engineering at the University and two from École Polytechnique Fédérale de Lausanne in Switzerland.

External Reviewers:

Reviewer A: “The funding portfolio of Dr. Lempka is strong. He was awarded his first R01 as PI in 2019 (\$1,648,201), and a second R01 as a co-PI in 2022 (\$2,992,307). He is co-I on two other NIH grants and one NIBIB grant. In addition, he is PI on three awards from industry (Abbott, Medtronic, Presidio) totaling ~\$540,000. Dr. Lempka is also [a] mentor on an NIH F31 award for one of his graduate students. Overall, I view his level of funding to be outstanding. He has continued to garner funding from different sources which shows that he is obtaining a diverse portfolio of funding that is needed to successfully run a laboratory.”

Reviewer B: “His 19-year prolific publishing record and rate demonstrate not only his work ethic but his creativity. This publication rate is phenomenal...Dr. Lempka has contributed at an outstanding level in service. He has performed extensive service at the departmental, college, university, national, and international level...Based on Dr. Lempka’s application highlighting his research, service, and teaching, I believe he is an excellent candidate for promotion at the University of Michigan. He has an outstanding publication record, is well-funded, is heavily involved in service, and teaches the next generation effectively.”

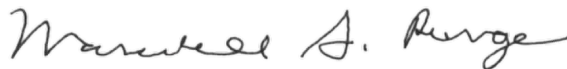
Reviewer C: “Dr. Lempka has blended experiment and theory in an impressive manner by combining clinical studies with computational methods. His efforts have resulted in an impressive intellectual property portfolio spanning lead assemblies to nerve conduction block indicative of his translational impact...With his funding success and publications, Dr. Lempka exceeds expectations for an appointment at Associate Professor with tenure.”

Reviewer D: “[Dr. Lempka] is very active as a grant and manuscript reviewer. He is also very active as a meeting organizer, which I can confirm firsthand, having seen him chair various sessions at the North American Neuromodulation Society (NANS) meeting. Comparing against other faculty at his level, I would rank this level of engagement as above average.”

Reviewer E: “Scott has proved that he will succeed, already moving his science from models to patients, and I applaud his boldness to pursue this line of work...Scott has established a strong record of (i) conducting and publishing original research, (ii) creating and pursuing innovative translational research that at its early stages has already received national and international recognition, (iii) training students of all levels to be successful scientists and scholars, (iv) securing research funds, and (v) providing significant service to the university and neuromodulation community at large.”

Summary of Recommendation:

Dr. Lempka is an accomplished researcher, mentor, and educator in an important clinically-relevant discipline. His work is productive, and he has an established national reputation based on his publication and funding records, invited speaking engagements, and national service. He is an outstanding teacher and mentor, and also engages in substantial professional and institutional service. Therefore, we are pleased to recommend Scott F. Lempka, Ph.D. for promotion to associate professor of biomedical engineering, with tenure, Department of Biomedical Engineering, Medical School and College of Engineering, and associate professor of anesthesiology, without tenure, Department of Anesthesiology, Medical School.



Marschall S. Runge, M.D., Ph.D.
Executive Vice President for Medical Affairs
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