Approved by the Regents
May 18, 2023

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

William C. Stacey, M.D., Ph.D., associate professor of neurology, with tenure, Department of Neurology, Medical School, and associate professor of biomedical engineering, without tenure, Department of Biomedical Engineering, Medical School and College of Engineering, is recommended for promotion to professor of neurology, with tenure, Department of Neurology, Medical School, and professor of biomedical engineering, without tenure, Department of Biomedical Engineering, Medical School and College of Engineering.

Academic Degrees:

M.S.	2010	University of Pennsylvania
M.D.	2002	Case Western Reserve University
Ph.D.	2000	Case Western Reserve University
B.S.	1995	Brigham Young University

Professional Record:

2017-present	Associate Professor of Neurology, with tenure, University of Michigan
2017-present	Associate Professor of Biomedical Engineering, University of Michigan
2010-2017	Assistant Professor of Neurology, University of Michigan
2010-2017	Assistant Professor of Biomedical Engineering, University of Michigan
2008-2010	Instructor of Neurology, University of Pennsylvania

Summary of Evaluation:

Teaching: Dr. Stacey's teaching activities are broad, and include classroom teaching at several levels, mentorship at multiple levels, and clinical teaching and training. He has taught undergraduate students, graduate students, medical students, post-doctoral fellows, advanced post-graduate fellows, clinical fellows, and faculty members. He currently lectures in several biomedical engineering graduate courses including Neural Engineering (BME419-519), Epilepsy (BME 517), and Neuroscience 616. He has served on numerous dissertation committees as well. His primary teaching role is directed at the interface between epilepsy and engineering. He is a dedicated mentor to students outside the University of Michigan and has been very active in mentoring through the Junior Investigator's Workshop of the American Epilepsy Society. He assists in the mentoring programs of the International Conference of technology and Analysis of Seizures. He is the clinical chair of the Early Career Grants Committee of the American Epilepsy Society which trains early faculty to review grant proposals.

Research: Dr. Stacey's research focuses on using engineering tools to improve the diagnosis and treatment of epilepsy. His lab uses a combination of electrophysiology, machine learning, signal processing, and computational modeling to analyze EEG biomarkers to develop novel methods of epilepsy diagnosis and treatment. This work involves two primary approaches: characterizing

high-frequency oscillations to help clinicians identify epileptic networks, and using dynamical models to understand how to identify and control how the brain starts and stops seizures. His work in both fields has led to several national and international collaborations, such as an international consortium from the US, the United Kingdom, and Switzerland to help with the clinical translation of high-frequency oscillations, and has a decade of collaboration with researchers in France and Australia on mathematical models of seizures that have led to highly cited papers. He has had consistent National Institutes of Health funding.

He also has a longstanding collaboration with researchers in the Department of Emergency Medicine investigating EEG biomarkers in patients with cardiac arrest. He has authored 64 peer-reviewed papers in important journals such as *Brain Communications*, *Neurophysiology*, and *Epilepsy Research*. He has been invited on more than 50 occasions to present his work both nationally and internationally. He is a key organizer and one of the creators of the International Conference on Technology and Analysis for Seizures (ICTALS), which is the top international conference in his field of computational expertise. His work is clearly internationally recognized and highly valued by clinicians and basic scientists.

Recent and Significant Publications:

Scott JM, Gliske SV, Kuhlmann L, Stacey WC, "Viability of Preictal High-Frequency Oscillation Rates as a Biomarker for Seizure Prediction," *Front Hum Neurosci* 14: 612899, 01/2021. PM33584225/PMC7876341

Crisp DN, Cheung W, Gliske SV, Lai A, Freestone DR, Grayden DB, Cook MJ, Stacey WC, "Quantifying epileptogenesis in rats with spontaneous and responsive brain state dynamics," *Brain Commun* 2(1):fcaa048, 01/2020. PM32671339/PMC7331126

Gliske SV, Qin Z, Lau K, Alvarado-Rojas C, Salami P, Zelmann R, Stacey WC, "Distinguishing false and true positive detections of high frequency oscillations," *J Neural Eng* 17(5): 056005, 01/2020. PM32932244/PMC8547344

Saggio ML, Crisp D, Scott JM, Karoly P, Kuhlmann L, Nakatani M, Murai T, Dümpelmann M, Schulze-Bonhage A, Ikeda A, Cook M, Gliske SV, Lin J, Bernard C, Jirsa V, Stacey WC, "A taxonomy of seizure dynamotypes," *Elife* 9: 01/2020. PM32691734/PMC7375810

Luna-Munguia H, Zestos AG, Gliske SV, Kennedy RT, Stacey WC, "Chemical biomarkers of epileptogenesis and ictogenesis in experimental epilepsy," *Neurobiol Dis* 121: 177-186, 01/2019. PM30304705/PMC6242767

Service: Dr. Stacey has an extensive service record at the institutional, national, and international levels. Institutionally, he serves on the Neurological Evaluation After Therapeutic Hypothermia Committee, the Data Safety Monitoring Board, the Emergency Medicine Post Cardiac Arrest Workgroup, and is a developer for the Protocol for Neurological Assessment After Therapeutic Hypothermia. His clinical work has led to significant national and international service including the International League Against Epilepsy/American Epilepsy Society task force to develop standards for EEG recordings. He continues to serve on the organizing committee for the International Conference on Technology and Analysis for Seizures.

Dr. Stacey currently staffs a weekly resident clinic at the Veterans Affairs Ann Arbor Healthcare System (VAAAHS). He is responsible for one-half of EEGs and all evoked potentials at that institution as well. Dr. Stacey also maintains a clinic schedule at the University of Michigan

Department of Neurology and serves on-call for epilepsy/EEG service and intraoperative monitoring.

External Reviewers:
Reviewer A: "Dr. Stacey is an internationally recognized expert and leader in epilepsy research…He is the founder and pioneer of the world's largest intracranial EEG database, widely used for clinical practice and neuroscience research… He has identified a new epileptogenicity biomarker, which has an outstanding potential to introduce a therapeutic intervention to prevent a given patient from developing a clinical seizure. His publication records include at least 61 peer-reviewed articles, many of which were published in the highest-impact journals in given fields…"

Reviewer B: "…He is a very well-funded clinician/scientist with several seminal publications. The combination of his biomedical engineering and neurological expertise is relatively unique and most important these days, given the increasing importance of technology in the epilepsy field. He is clearly an academic leader, at the top of his field in relation to his peer group."

Reviewer C: "…service includes serving on the editorial board of eNeuro, the official online journal of the Society for Neuroscience, and Epilepsy Research, a high-quality specialty specific journal…also has served the American Epilepsy Society (AES) as the chair of the Early Career Grant Committee and as a member of the Research and Training Council. The AES is the premier society for professionals committed to finding a cure for epilepsy. Only those recognized as leading epilepsy researchers are asked to serve in the positions that Dr. Stacey has held. His service to the Society combined with his research achievements led the AES to designate Dr. Stacey as a fellow of the AES, a high honor."

Reviewer D: "Dr. Stacey has published important papers and maintains active NIH and foundation funding continuously. His major NIH funding as PI is a long standing R01 on high frequency oscillations that are quantifiable measures of epileptic activity that could have important roles in epilepsy. I would not say he is a national leader in the field, but has made important contributions mostly from the technical side in his publications that I reviewed. From these interests, he serves on national and international committees and has given important presentations globally."

Reviewer E: "I am most familiar with Dr Stacey's research in the domain of high frequency oscillations and I can attest that we have learnt [sic] a big deal from his stellar work. His contribution to our field of epileptology through his excellent background in computational neuroscience has opened several new ways of research into identifying potential EEG biomarkers for predicting and detecting seizures. I very highly recommend his promotion to the rank of Tenured Professor and I look forward to reading more of his work in the coming years."

Reviewer F: "He lists 61 total peer-reviewed publications on his CV; during time in rank as Associate (since 2017), he lists 27 publications; of these, he was senior author in 13. Many of these 13 publications were in journals of moderated to high impact. I believe that his work is making a genuine impact in the field of clinical epilepsy, and that he is bringing exceptional expertise to his field which few investigators possess. It is also clear to me that he is on an upward trajectory in his academic productivity."

Summary of Recommendation:
Dr. Stacey is an internationally recognized clinician-scientist in the area of epilepsy. He is an outstanding educator, clinician, and scholar who has made a significant impact as a pioneer in the automated detection of pathological high-frequency oscillations and their characterization as a biomarker of epileptic brain tissue. We are pleased to recommend William C. Stacey, M.D., Ph.D. for promotion to professor of neurology, with tenure, Department of Neurology, Medical School, and professor of biomedical engineering, without tenure, Department of Biomedical Engineering, Medical School and College of Engineering.

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

Alec D. Gallimore, Ph.D.
Robert J. Vlasic Dean of Engineering
College of Engineering

May 2023