

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF ANESTHESIOLOGY
DEPARTMENT OF MOLECULAR AND INTEGRATIVE PHYSIOLOGY

Dinesh Pal, Ph.D., assistant professor of anesthesiology, Department of Anesthesiology, and assistant professor of molecular and integrative physiology, Medical School, is recommended for promotion to associate professor of anesthesiology, with tenure, Department of Anesthesiology, and associate professor of molecular and integrative physiology, without tenure, Medical School.

Academic Degrees

Ph.D.	2006	Jawaharlal Nehru University, India
M.Phil.	2001	Jawaharlal Nehru University, India
M.S.	1999	University of Delhi, India
B.Sc.	1997	University of Delhi, India

Professional Record

2021 - present	Assistant Professor of Molecular and Integrative Physiology, University of Michigan
2019 - present	Assistant Professor of Anesthesiology, University of Michigan
2015 - 2019	Research Assistant Professor of Anesthesiology, University of Michigan
2012 - 2015	Research Investigator of Anesthesiology

Summary of Evaluation:

Teaching: Dr. Pal is active in the institution's educational mission. He is the faculty science lead for the Patient-Based Scientific Inquiry course, that requires one-on-one meetings with medical students to develop basic science research questions related to decisions and outcomes in the context of clinical patient care. Dr. Pal is also a co-director for a course on Cognitive Neuroscience of Consciousness. The course is primarily directed towards graduate and senior undergraduate students. He has also been a faculty mentor on a course designed to help graduate students develop critical thinking in the field of neuroscience, and enhance communication skills for rigorous scientific presentations. In addition to formal teaching, he has co-led a workshop on work-life balance in the Neuroscience Graduate Program and a workshop on career development as part of the University of Michigan's Annual Neuroscience Conference.

Dr. Pal is extensively involved in mentoring graduate and undergraduate students. He has also mentored over a dozen undergraduate students, many of whom graduated with co-author publications. In addition, he has had engineering students train with him to gain experience in neuroscience research with a focus on consciousness science. He has delivered several intramural lectures and has also been invited to speak at international symposiums on sleep and consciousness and anesthetic mechanisms. Most recently, Dr. Pal was invited to speak at the International Conference on Mechanisms of Anesthesia and the Annual Conference of the Indian Society of Neuroanesthesiology and Critical Care.

Research: Dr. Pal's laboratory is engaged in three primary lines of investigation. The first area of research seeks to understand if, and how, sedative-hypnotics can provide a sleep-like state with the associated physiological benefits. He is the principal investigator for this study which is funded

through a National Institute of General Medical Sciences (NIGMS) R01 grant. Dr. Pal is also the principal investigator on a NIGMS R01 grant investigating the cortical mechanisms of consciousness, and on a NIGMS R21 grant that aims to identify systems level mechanisms that underlies wide differences in recovery profiles from anesthesia and coma. He is the principal investigator on a grant from TRYP Therapeutics Inc. to conduct preclinical animal studies aimed at investigating the potential of psychedelics in alleviating chronic pain. He has published 23 peer-reviewed articles and his research was recognized by receipt of a New Investigator Award by the American Physiological Society.

Recent and Significant Publications:

Huels ER, Groenhout T, Fields CW, Liu T, Mashour GA, Pal D: Inactivation of Prefrontal Cortex Delays Emergence from Sevoflurane Anesthesia. *Frontiers in Systems Neuroscience* 2021 (accepted for publication)

Mondino A, Hambrecht-Wiedbusch VS, Li D, York AK, Pal D, González J, Torterolo P, Mashour GA, Vanini G: Glutamatergic Neurons in the Preoptic Hypothalamus Promote Wakefulness, Destabilize NREM Sleep, Suppress REM Sleep, and Regulate Cortical Dynamics. *Journal of Neuroscience* 41: 3462- 3478, 2021. PMC8051693

Parkar A, Fedrigo DC, Alam F, Vanini G, Mashour GA, Pal D: Carbachol and Nicotine in Prefrontal Cortex Have Differential Effects on Sleep-Wake States. *Frontiers in Neuroscience* 2020; 14:567849. PMC7714754

Brito M, Li D, Mashour GA, Pal D: State-Dependent and Bandwidth-Specific Effects of Ketamine and Propofol on Electroencephalographic Complexity in Rats. *Frontiers in Systems Neuroscience* 2020; 14:50. PMC7431468

Pal D, Li D, Dean JG, Brito MA, Liu T, Fryzel AM, Hudetz AG, Mashour GA: Level of Consciousness Is Dissociable from Electroencephalographic Measures of Cortical Connectivity, Slow Oscillations, and Complexity. *Journal of Neuroscience* 2020; 40:605-618. PMC6961988

Service: Dr. Pal is the vice chair of the Institutional Animal Care and Use Committee (IACUC), which provides oversight to the Animal Care and Use Program for all animal research activities in all three campuses of the University of Michigan. He is also the chair of the Compliance Committee of the Animal Care and Use Program, which investigates allegations of non-compliance with the animal care and use policies. In the Neuroscience Graduate Program, he serves on the Prelims Committee where members prepare the questions for preliminary examination taken by graduate students who seek candidacy for their Ph.D. degrees. Dr. Pal is an elected member of the University Senate Assembly from the Medical School. His role is to solicit input about issues that impact faculty and represent their interests in the University Senate. He serves on the University Senate Committee on Fairness, Equity, and Inclusion and the University Committee on Anti-Racism. He was a member of the Committee on Civil Rights and Liberties. In the Neuroscience Graduate Program, Dr. Pal is the faculty facilitator for the DEI Task Force on Outreach and Activism and was one of the faculty facilitators to moderate the Book Club started by the program in the wake of recent race-related unrest.

On a regional level, Dr. Pal was a K-12 Outreach Committee Member in the Michigan Physiological Society. Internationally, he is a member of the Society for Neuroscience in Anesthesiology and Critical Care Research Committee, and Scientific Committee. He has also served on the Abstract Committee of the Society for Anesthesia and Sleep Medicine to review the abstract submissions

for the annual meetings, and is an editorial board member for *Sleep and Vigilance*, and a review editor for *Sleep Advances*, and *Frontiers in Neuroscience*.

External Reviewers:

Reviewer A: “He is currently well-funded and resides in a unique research environment...well-known for its innovation and collaboration, the Center for Consciousness Science, well-known for its innovation and collaboration...As a gifted lecturer and clear thinker, Dinesh has established himself as an inspirational mentor...I can confidently vouch for Dr. Pal’s commitment to a diverse and inclusive research and education environment.”

Reviewer B: “He has produced seminal work in the area of sleep and arousal and is becoming a leader in the field...Dr. Pal is also an outstanding educator and mentor...He is a well-funded, creative scientist who continues to make important contributions to the neuroscience of anesthesia field.”

Reviewer C: “...Dr. Pal has made a significant impact on a national stage. His scholarship, grant portfolio, wide-reaching and productive collaborations, and mentorship of undergraduates, PhD students, plus postdoctoral fellows would make him worthy of promotion to the rank of Associate Professor with tenure at my institution.”

Reviewer D: “Dr. Pal has established a robust level of independent funding...In addition to grant funding, Dr. Pal has clearly demonstrated both scholarly independence and strong collaborative interdisciplinary contributions requisite for promotion to a senior academic rank...All five of the candidate’s selected works are significant...”

Reviewer E: “Dinesh’s work is of the highest quality nationally and internationally, and successfully spans the bridge between pure and clinical sciences. He has progressively developed his expertise in linking neurochemical and electrophysical explanations of anesthesia and sleep – which provides mechanistic explanations for many clinically observed anesthesiological phenomena. I have no doubt that he has set the basis for many significant future discoveries...Dinesh’s work is outstanding.”

Summary of Recommendation:

Dr. Pal is an outstanding researcher, whose work in the fields of neurobiology of sleep and anesthesiology have been met with distinctive recognition both at the national and international levels. He is an excellent researcher with commendable service contributions. I am pleased to recommend Dinesh Pal, Ph.D. for promotion to associate professor of anesthesiology, with tenure, Department of Anesthesiology, and associate professor of molecular and integrative physiology, without tenure, Medical School.



Marshall S. Runge, M.D., Ph.D.
Executive Vice President of Medical Affairs
Dean, Medical School

May 2022