

PROMOTION RECOMMENDATION  
UNIVERSITY OF MICHIGAN  
MEDICAL SCHOOL  
DEPARTMENT OF ANESTHESIOLOGY  
DEPARTMENT OF NEUROSURGERY

George A. Mashour, M.D., Ph.D., assistant professor of anesthesiology, Department of Anesthesiology, and assistant professor of neurosurgery, Department of Neurosurgery, Medical School, is recommended for promotion to associate professor of anesthesiology, with tenure, Department of Anesthesiology, and associate professor of neurosurgery, without tenure, Department of Neurosurgery, Medical School.

Academic Degrees:

M.D.	2001	Georgetown University
Ph.D.	1999	Georgetown University
B.A.	1991	St. John's College, Annapolis, MD

Professional Record:

2007-present	Assistant Professor of Anesthesiology and Assistant Professor of Neurosurgery, University of Michigan
2009-present	Adjunct Assistant Professor of Biomedical Engineering, Wayne State University

Summary of Evaluation:

Teaching: George Mashour is a neuroanesthesiologist and neurointensivist. He is the director of the Division of Neuroanesthesiology and in that capacity he teaches one-on-one with residents and fellows in the neurosurgical operating rooms and the neurointensive care unit. As part of his laboratory effort, he also teaches students, residents, fellows, and post-doctoral fellows as part of his basic and translational research program. He has mentored five research fellows, four clinical fellows, five graduate students, as well as undergraduates and medical students. He has developed the clinical teaching program for neuroanesthesiology. He received the Teacher of the Year Award in Anesthesiology (2008) and also a resident teaching award from the Department of Neurosurgery (2010). Most recently, in 2011 he received the Excellence in Mentorship Award (Inaugural) from the UM Postdoctoral Association.

Research: Dr. Mashour's area of investigation is to understand the basic neurophysiology of consciousness and how that relates to anesthetic states, waking states, dreaming and sleep. He is one of the world's authorities. He has over 53 peer-reviewed publications; 27 of which are first-authored and 18 are senior-authored. In addition, he has more than 60 invited commentaries or book chapters and three textbooks related to neuroscience and anesthesiology. Shortly after joining the department as a fellow, Dr. Mashour received a \$500,000 grant from the Foundation of Anesthesia Research and Education to investigate intraoperative neurologic monitoring for the detection of awareness during anesthesia. He undertook and completed one of the largest prospective, randomized trials in the field. He has subsequently received a NIH KL2 Career Development Award and more recently was awarded

NIH R01 funding. His research spans the full translational gamut from mathematical modeling of neural networks to small animal experiments and finally, large clinical trials. Dr. Mashour has given more than 50 invited lectures at many of the top institutions in the world; including Harvard Medical School, Massachusetts General Hospital, University of California (San Francisco), Stanford, Cornell University, University of Washington, University of Pittsburgh, Columbia, Vanderbilt, as well as lectures in Denmark, Italy, Portugal, Canada, Korea, England (at the University of Oxford) and Switzerland (at the University of Basel). He is an ad hoc reviewer for 28 journals and on the editorial board of *Anesthesia & Analgesia* (which is the publication for the International Anesthesia Research Society and it is the oldest journal in the field), he is the associate editor and cover editor for that journal. He is also on the editorial boards of the *Journal of Neurosurgical Anesthesiology* and *Science and Translational Medicine*. In 2011, Dr. Mashour received the Presidential Scholar Award given by the American Society of Anesthesiologists, which is to honor one exceptional academic anesthesiologist within their first seven years of training. Dr. Mashour is a nationally and internationally recognized scholar, also evidenced by his election to the membership of the Association of University Anesthesiologists (AUA).

#### Recent and Significant Publications:

Mashour GA, Lipinski W, Matlen L, Walker AJ, Turner A, Schoen W, Lee U, Poe GR: Isoflurane anesthesia does not satisfy the homeostatic need for rapid eye movement sleep. *Anesthesia and Analgesia* 110:1283-1289, 2010.

Pal D, Lipinski WJ, Walker AJ, Turner AM, Mashour GA: State-specific effects of sevoflurane anesthesia on sleep homeostasis: selective recovery of slow wave but not rapid eye movement sleep. *Anesthesiology* 114:302-310, 2011.

Lee U, Muller M, Noh GJ, Mashour GA: Dissociable network properties of anesthetic state transitions. *Anesthesiology* 114:872-881, 2011.

Avidan MS, Jacobsohn, Glick D, Burnside BA, Zhang L, Villafranca A, Karl L, Kamal S, Torres B, O'Connor M, Evers AS, Grathwohl S, Lin N, Palanca BJ, Mashour GA: Prevention of intraoperative awareness in a high-risk surgical population. *New England Journal of Medicine* 365:591-600, 2011.

Ku S, Lee U, Noh GJ, Jun IG, Mashour GA: Preferential inhibition of frontal-to-parietal feedback connectivity is a neurophysiologic correlate of general anesthesia in surgical patients. *PLoS One* 6:e25155, 2011.

Service: Dr. Mashour has a variety of administrative positions in the department; he is the director of neuroanesthesiology, formerly the program director of the neuroanesthesiology fellowship and the director of clinical neuroscience research. Within the department, he is currently a member of the Executive Committee, Clinical Research Committee, Medical Team Training Implementation Team and a member of the ad hoc committee for the GME residency review program. He has recently been appointed to the position of associate chair for faculty affairs. For the institution, he is a member of the Steering Committee for Neurosciences and the Multidisciplinary Intraoperative Monitoring Forum. Nationally he is on the Education Committee for the Society of Neuroanesthesia and Critical Care (SNACC). He is one of the co-investigators for the American Society of Anesthesiologists (ASA) Anesthesia Awareness Registry; he is a member of the SNACC working committee of the Task Force for Neuroanesthesia Fellowships; the Board of Directors of SNACC, and he is also a member of the ASA Excellence in Research Committee, Experimental Neurosciences Subcommittee, and

Neuroanesthesia Educational Track Subcommittee. Dr. Mashour is a clinically practicing neuroanesthesiologist and neurointensivist. He provides patient care while training residents and fellows in neuroanesthesia in the operating rooms of the University Hospital. He also is one of the neurointensivists who cares for patients in the Neurosurgical Intensive Care Unit. With the recent approval of the new UH South Neurosciences Hospital, Dr. Mashour will take a leadership role in managing and developing the clinical programs to provide safe care for patients undergoing neurosurgical procedures. In addition he provides in-house 24-hour call for emergency care in the University Hospital. In spite of this significant clinical effort, Dr. Mashour has been impressively productive academically and administratively.

External Reviewers:

Reviewer A: "In terms of ranking Dr. Mashour's scholarly and professional niche, I can say with complete confidence that his contributions to date have been the most significant additions to the field of any other investigator at his level; in fact, Dr. Mashour's contributions are significant enough to place him at the forefront in the field of consciousness and general anesthetic mechanisms of any investigator, at any academic rank."

Reviewer B: "...understanding the interaction between consciousness and anesthesia is Dr. Mashour's focus, and I am of the opinion that his understanding is more promising than that of any other investigator that I am aware of....Having heard Dr. Mashour lecture on his uniquely interdisciplinary area of expertise, it comes as no surprise that he has been invited to speak at so many important meetings over such a short period of time."

Reviewer C: "George's work carries important implications to many areas of medicine and science, and has in some cases already been influential in altering clinical care."

Reviewer D: "George's works [sic] has been recognized both nationally and internationally. He was elected to the Association of University Anesthesiologists membership, a rare event for an Assistant Professor....George is an outstanding researcher and a leader in the field of consciousness related to anesthesia. In addition, he has received awards for his teaching and has mentored numerous students."

Reviewer E: "...Dr. Mashour is a truly remarkable physician and scientist who has already made fundamental contributions to the specialty of Anesthesiology and well beyond. All indications are that his innovation and productivity will continue."

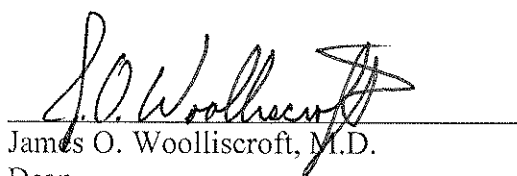
Reviewer F: "Dr. Mashour's work on awareness has helped to shape the role of intraoperative monitoring for awareness in anesthesia. Additionally, his work on anesthesia and sleep demonstrates convincingly that anesthetics are not associated with sleep homeostasis, which has implications for the use of anesthetics as sleep adjuvants. Finally, his work on the neurobiology anesthesia is essential to our understanding of the basic mechanisms of anesthetic action, one of the greatest unsolved mysteries in pharmacology."

Reviewer G: "I would confirm that George's research work has impacted anesthesiology enormously. His papers have been published in the most prestigious journals."

Reviewer H: “Dr. Mashour has demonstrated excellence in basic, translational, and clinical neuroscience research as it relates to anesthesiology. He has already achieved international recognition for his work in the field of consciousness and anesthetic-related mechanisms that suppress consciousness and result in intraoperative recall. This is evidenced by numerous invitations to speak at various meetings.”

Summary of Recommendation:

Dr. Mashour is a gifted academician in every respect; clinician, teacher, researcher, and administrator. I am pleased to recommend George A. Mashour, M.D., Ph.D. for promotion to associate professor of anesthesiology, with tenure, Department of Anesthesiology, and associate professor of neurosurgery, without tenure, Department of Neurosurgery, Medical School.

A handwritten signature in black ink, appearing to read "J.O. Woolliscroft", is written over a horizontal line.

James O. Woolliscroft, M.D.

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*Lyle C. Roll Professor of Medicine*

May 2013