

May 17, 2007

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

Gina R. Poe, Ph.D., Assistant Professor of Anesthesiology, Department of Anesthesiology, and Assistant Professor of Molecular and Integrative Physiology, Department 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, Department of Molecular and Integrative Physiology, Medical School.

Academic Degrees:

Ph.D.	1995	University of California, Los Angeles
B.A.	1987	Stanford University

Professional Record:

2001-Present	Assistant Professor of Anesthesiology, University of Michigan
2001-Present	Assistant Professor of Molecular and Integrative Physiology, University of Michigan
1998-2001	Assistant Professor of Veterinary and Comparative Anatomy, Pharmacology and Physiology, Washington State University

Summary of Evaluation:

Teaching: Dr. Poe has been an active teacher throughout her career, teaching elementary, undergraduate, graduate, and postgraduate trainees. She was a teaching associate at UCLA, a lecturer at the University of Arizona, and taught extensively as an instructor and assistant professor while at Washington State University; and has continued to accelerate her teaching involvement while at the University of Michigan. In the fall of 2001 she was one of the original faculty in a new undergraduate course, entitled "REM Sleep Cognition and Dreaming." This course has been extremely popular and was continued in 2002, 2003, and 2004. Additionally, she has been an instructor in the neurosciences series, *Neurobiology of Learning and Memory* in *Principles of Neuroscience II* course. She has also given an undergraduate course entitled, "Function of REM Sleep" as part of the Physiology Undergraduate Curriculum. She has given individual lectures in the Department of Anesthesiology, Neuroscience Program 700 Seminar series, and in the Department of Molecular and Integrative Physiology Seminar Series. In addition to this didactic teaching she has had five laboratory undergraduate students on rotation, another six undergraduates on independent study, as well as been on nine PhD thesis committees, and is currently on the dissertation committee for an additional five PhD students. In addition to this teaching involvement at the University of Michigan, she has given 12 external presentations throughout the country and Japan.

Research: The 2000 Nobel Prize was awarded for discoveries concerning the biological basis for learning and memory. Dr. Gina Poe is known nationally and internationally for her research to determine the physiological pattern of neural activity during sleep that could support learning. Dr. Poe is among a handful of scientists who are using state-of-the-art electrophysiologic recording techniques to examine the real-time neuronal dynamics of learning and memory in behaving animals. Within this group of researchers, Dr. Poe has pioneered the investigation of the role of sleep-wake state in modulating memory formation. In particular, Dr. Poe's work has focused on the hypothesis that REM sleep is fundamental to the consolidation of memory within the hippocampus. Her seminal paper, published in *Brain Research* in 2000, shows that specific features of REM sleep are integrally involved in both the erasure of "familiar," previously consolidated, memories, and the strengthening of new, as yet unconsolidated, tentative memories in the hippocampus. This highly cited work has had a fundamental impact on the direction of research in the field, and specifically, on models of how the hippocampus processes new information.

Dr. Poe's work has placed her at the center of the ongoing vigorous and spirited debate about the functions of sleep. A large community of scientists, ranging from human behaviorists to fruit-fly geneticists, has weighed in on whether among the functions of sleep there is an essential role in learning and memory. The controversy over whether sleep has a role in learning and memory has fueled some of the most important work in sleep science, and has been featured in several major publications (e.g. *Science* 294, Issue 5544, 2001). While there is certainly no consensus on this question, all sides rely on Gina's work for elucidation of the physiological mechanisms.

Enthusiasm for this important research program extends to the peer review committees of NIH and NSF. Her NSF/NIH computational and experimental grant investigating the neurotransmitter effect on LTP in the hippocampus was enthusiastically funded last year and the competitive renewal of her RO1 grant entitled "REM sleep and Memory," received a very enthusiastic score (2.8 percentile) last October.

Recent and Significant Publications:

Booth V, Poe GR: Input source and strength influences overall firing phase of model hippocampal CA1 pyramidal cells during theta: Relevance to REM sleep reactivation and memory consolidation. *Hippocampus* 16(2):161-173, 2006. *Cover article.

Bjorness TE, Riley BT, Poe GR: REM restriction persistently alters strategy used to solve a spatial task. *Learning and Memory* 12(3):352-359, 2005.

Poe GR, Thompson CM, Riley BT, et al: A spatial memory task appropriate for electrophysiological recordings. *Journal of Neuroscience Methods* 121:65-74, 2002.

Poe GR, Nitz DA, McNaughton BL, Barnes CA: Experience-dependent reversal of theta phase discharge profiles in REM sleep. *Brain Res* 855(1):176-180, 2000.

Poe GR, Teed RG, Insel N, White R, McNaughton BL, Barnes CA: Partial hippocampal inactivation: effects on spatial memory performance in aged and young rats. *Behav Neurosci* 114(5):940-949, 2000.

Service: Since coming to the University of Michigan, Dr. Poe has performed most of her committee service in the Neuroscience Interdepartmental Program where she served two years on the Executive Committee making decisions on student advancement, the disposition of funds, and contributing questions to the written and oral qualifying examination. She served three years on the qualifying exam committee, five times as an examiner, and two times chairing the exams. Gina Poe applied for and was awarded two Rackham Interdisciplinary Workshop grants. She used these funds to organize a cross campus, cross-disciplinary workshop on Neural Plasticity attended weekly by 20-30 faculty, graduate students and postdoctoral scholars and capped by a lecture and workshop by an invited leader in the field. She also served as reviewer for Biomedical Research Science Awards within the Medical School last year and as a chalk talk reviewer for RO1 grant submissions of three junior faculty in Molecular and Integrative Physiology. She has served the past two and a half years on the Junior Women's Faculty Advisory Panel run through the Center for the Education of Women and has served as guest speaker at two minority training sessions on how to survive graduate school, select a postdoctoral position and get a job, one for the medical school graduate and postdoctoral trainees, and one for science and engineering graduate students in Rackham.

Dr. Poe has recently won the national election to head the Basic Sleep Section of the North American Sleep Research Society. She is also serving her fourth year as a member of the trans-government agency Sleep Disorders Research Advisory Board and the National Council for Sleep and Sleep Disorders Research advising different agencies including the Justice Department, Department of Transportation, Department of Education, and the NIH on sleep research and sleep disorders issues. She is the basic science expert on the panel of 12 members. Dr. Poe has served as reviewer on over 15 ad hoc grant review committees from the NIH and the NSF and ten national and international journals, including the *Journal of Neuroscience*, *Sleep*, *Sleep Research*, and *European Journal of Neuroscience*.

Internationally, Dr. Poe served on the planning committee of the US National Academy of Sciences and the Japan Society for the Promotion of Science: "Japan/American Frontiers of Science" 2005 meeting, organizing a symposium on consciousness and another on autism together with a colleague in Japan.

External Review:

Reviewer A: "Dr. Poe...has begun to establish a solid reputation as a core member and leader in this field of neurophysiology...Dr. Gina Poe has achieved the time in her career when promotion to the level of associate professor is appropriate and well earned. I feel certain that she would receive such a promotion at [my institution]."

Reviewer B: "...Dr. Poe has the high respect of her national colleagues. Specifically, her research program has the strong confidence of her peers, and NIH, such that she now holds two major NIH grants..."

Reviewer C: "Her research is on the cutting edge of basic sleep neurobiology...With the number of funded grants and the number of publications, and with her outstanding teaching and mentoring, Dr. Poe would certainly qualify for a promotion to Associate Professor in our department."

Reviewer D: “Dr. Poe has significantly contributed to basic research with the study of the limbic system in relation with sleep and memory, and to the development of a technique of optical imaging of neuron activity....There is no doubt that Dr. Poe would achieve equivalent rank at my institution at this time...”

Reviewer E: “Gina is doing some truly ground breaking work on sleep and memory....Gina has acquired a set of technical and research skills in cell physiology that few are able to match.”

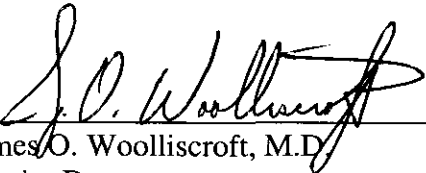
Reviewer F: “Since 2003, she is also a member of the National Council for Sleep and Sleep Disorders Research at NIH, a position that demonstrates the respect that she has gained from her colleagues.”

Reviewer G: “Dr. Poe has quite an impressive list of publications that appeared in recognized international journals....Her work belongs to the best research in the area....Dr. Poe’s involvement in national peer organizational services as documented in her CV is impressive and attests to her large commitment as well as to the recognition by the scientific community and peers.”

Reviewer H: “Clearly she would be granted tenure at [this institution]. Indeed, we actively tried to recruit her last year for a tenured position....Personally I am hopeful that we can steal her from Michigan because many of us would welcome what she would bring to us in terms of collaborative studies, prestige and diversity.”

Summary of Recommendation:

Gina R. Poe, Ph.D., is a talented and productive teacher and investigator who brings recognition to her Department and the University. She is doing groundbreaking work in the area of sleep, memory, and how the REM portion of sleep participates in the consolidation of memory in the hippocampus. She is an exemplary mentor and role model for junior faculty, women, and minority faculty. I am proud to have the opportunity to recommend Gina R. Poe, Ph.D., for promotion to Associate Professor, with tenure, in the Department of Anesthesiology and Associate Professor, without tenure, in the Department of Molecular and Integrative Physiology.


James O. Woolliscroft, M.D.
Interim Dean
Lyle C. Roll Professor of Medicine

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