Approved by the Regents
May 17, 2007

PROMOTION RECOMMENDATION
The University of Michigan
College of Literature, Science, and the Arts

E. Neil G. Marsh, associate professor of chemistry, with tenure, College of Literature, Science, and the Arts, is recommended for promotion to professor of chemistry, with tenure, College of Literature, Science, and the Arts [also associate professor of biological chemistry, without tenure, Medical School].

Academic Degrees:

Ph.D. 1988	University of Cambridge
B.A. 1985	Christ's College, University of Cambridge

Professional Record:

2005 – present	Associate Professor, Department of Biological Chemistry, University of Michigan
2000 – present	Associate Professor, Department of Chemistry, University of Michigan
1997 – present	Associate Scientist, Biophysics Research Division, University of Michigan
1995 – 2000	Assistant Professor, Department of Chemistry, University of Michigan
1990 – 1995	Royal Society University Research Fellow, University of Cambridge
1988 – 1990	Postdoctoral Research Fellow, The Johns Hopkins University

Summary of Evaluation:

Teaching – Professor Marsh has been an effective and dedicated classroom teacher and mentor to students at all levels. He has received excellent teaching evaluations in graduate and undergraduate biochemistry courses and upper class undergraduate organic chemistry courses. He has been a major contributor to the success of the new biochemistry undergraduate concentration, serving as student advisor and as a driving force for the development of a comprehensive set of classes to define the major. He has served as research mentor to eleven undergraduate students, eleven graduate students, and six postdoctoral fellows.

Research – Professor Marsh has garnered national and international recognition as a leading expert in the mechanistic enzymology of radical enzymes. Since promotion to associate professor, he has published 28 papers in peer-reviewed journals and has maintained external funding during most of this time. His research contributions have been innovative, bold, and have successfully challenged the dogma in the field. He has begun a new program in the area of *de novo* protein design, which significantly broadens his research portfolio. In particular, he is at the forefront of researchers investigating the utility of incorporating fluorinated amino acids into proteins, and this work may have important implications for the use of proteins in industrial processes. His research excellence has been recognized by his appointment as a fellow of the Royal Society of Chemistry (United Kingdom, 2005).

Recent and Significant Publications:

"Modulating protein structure with fluorous amino acids: increased stability and native-like structure conferred on a 4-helix bundle protein by hexafluoroleucine," with H.-Y Lee, et al., *Journal of the American Chemical Society*, 128, 2006, pp. 337-343.

"Mechanism of benzylsuccinate synthase: stereochemistry of toluene addition to fumarate and maleate," with C. Qiao, *Journal of the American Chemical Society,* 127, 2005, pp. 8608-8609.

"Pre-steady state measurement of intrinsic secondary tritium isotope effects associated with the homolysis of adenosylcobalamin and the formation of 5'-deoxyadensosine in glutamate mutase." With M.-C Cheng, *Biochemistry*, 43, 2004, pp. 2155-2158.

"A novel reaction between adenosylcobalamin and 2-methyleneglutarate catalyzed by glutamate mutase," with M. S. Huhta, et al., *Biochemistry*, 41, 2002, pp. 3200-3206.

Service – Professor Marsh has served on a number of departmental and university committees. His contributions as chair of Admissions and Recruiting Committees, and service on the departmental Executive and Long-range Planning Committees demonstrate his commitment to ensuring the excellence of the Department of Chemistry. He has been a tireless contributor to the development of the new biochemistry undergraduate concentration. In addition, he has contributed to the success of the new Chemical Biology Interdepartmental Graduate Program by serving as chair of the Admissions Committee. He has also been invited by the Dean of the Medical School to serve on the "Task Force for Team Science." He has served on grant review panels for the American Heart Association and the National Institutes of Health, as well as co-chair of the Bioorganic Gordon Conference.

External Reviews:

Reviewer (A)

"I have no hesitation whatever in giving his application for promotion my strongest support... During the last five years Neil has consolidated his position as one of the most respected and productive mechanistic enzymologists in the U.S.A. The hallmark of his work is a combination of elegance, clear thinking and an outstanding experimental technique."

Reviewer (B)

"Neil is a mechanistic enzymologist with uncommonly broad (and expanding) skills in physical/ biophysical methods on one extreme, and a high level of competence in organic mechanistic thinking on the other. This intellectual range has enabled Neil to examine the interesting question of the role of radical reaction processes in biology as the central theme of his research."

Reviewer (C)

"I hold him in high regard for his incisive approach to enzymology and dedication to basic biochemical research."

Reviewer (D)

"...he has maintained respectable levels of funding, and he has earned a reputation as an insightful, intellectually aggressive researcher who is much respected by others in the field. Furthermore, he has played active roles in revamping the undergraduate biochemistry curriculum, in designing and teaching many classes for both graduate and undergraduate students, and in mentoring graduate students and postdoctoral fellows. These efforts demonstrate that Neil is keenly aware of his responsibility to provide students at the University of Michigan with the opportunity to study and work at a modern, quality research institution."

Reviewer (E)

"...he has published an impressive 28 research papers and several invited reviews, with virtually all of these publications in high quality journals... Marsh is a leader in his field. Both the

novelty of his studies as well as their depth and intellectual content demonstrate that he is highly qualified to assume the rank of Full Professor."

Reviewer (F)
"Neil successfully renewed his NIH grant in 2004, and I believe his renewal for 2007 will be well received. ... He has been extremely productive in the last six years since his promotion to Associate Professor... ...as a colleague, I find Neil to be interested, and pleasant to be with, and I have never found him to be either self-serving or to speak in a derogatory manner of others... ...I think Neil's promotion is a 'slam dunk', and I support it with considerable enthusiasm and without hesitation."

Reviewer (G)
"Neil's research group has made a number of original and significant contributions... His contributions are especially noteworthy given the difficulty in using relevant small molecule model systems to probe the reaction mechanism. ... In addition to his work on enzymes, Neil has started a new research area... In my opinion, established investigators should be making significant contributions to more than one area of research..."

Reviewer (H)
"He is innovative in research, cares about education and is dedicated to science. It is apparent that others have also appreciated his work. ...he has already given invited presentations at six Gordon Research Conferences. ...Dr. Marsh has a bright future in research at the chemical-biological interface."

Reviewer (I)
"...Marsh is among the very brightest and most accomplished bioinorganic chemists and protein designers of his generation. If I were to write a review on protein design or radical enzymes, the papers included in his package would certainly be included. ... He is an outstanding scientist, and his work is continuing to evolve in new and exciting directions."

Summary of Recommendation:
Professor Marsh is an outstanding and creative researcher, a dedicated mentor and teacher, and an important contributor to the excellence of the Department of Chemistry. The Executive Committee of the College of Literature, Science, and the Arts and I recommend that Associate Professor E. Neil G. Marsh be promoted to the rank of professor of chemistry, with tenure, in the College of Literature, Science, and the Arts.

Terrence J. McDonald
Arthur F. Thurnau Professor,
Professor of History, and Dean
College of Literature, Science, and the Arts

May 2007