Approved by the Regents May 15, 2014

PROMOTION RECOMMENDATION
University of Michigan
College of Engineering
Department of Biomedical Engineering

David S. Sept, associate professor of biomedical engineering, with tenure, Department of Biomedical Engineering, College of Engineering and Medical School, is recommended for promotion to professor of biomedical engineering, with tenure, Department of Biomedical Engineering, College of Engineering and Medical School.

Academic Degrees:

Ph.D.	1997	University of Alberta, Theoretical Physics, Edmonton, Canada
B.S.	1992	University of Alberta, Physics, Edmonton, Canada

Professional Record:

2010-present	Associate Chair, Department of Biomedical Engineering, University of Michigan
2009-present	Associate Professor (with tenure) Department of Biomedical Engineering, University of Michigan
2007-2009	Associate Professor (with tenure) Department Biomedical Engineering, Washington University, St. Louis, MO
2007-2009	Director, Computational Biology Program, Washington University, St. Louis, MO
2001-2009	Primary Professor, Center for Computational Biology, Washington University, St. Louis, MO
2001-2007	Assistant Professor, Biomedical Engineering, Washington University, St. Louis, MO
1997-2001	Post-doctoral Fellow, Chemistry & Biochemisty, University of California, San Diego, CA

Summary of Evaluation:

Teaching: Professor Sept has received excellent teaching scores and is regarded as an excellent teacher and mentor. He has developed and taught two courses since arriving at the University of Michigan, BME 503 (originally taught for two semesters under BME 599) "Statistical Methods for BME," and a BME 599 course entitled "Protein Function and Interaction." In teaching these courses, Professor Sept received outstanding Q1 and Q2 scores, ranging from 4.06 to 4.84. BME 503, although a graduate course, has grown to over 75 students per class and serves as a fundamental graduate course on statistical methods. It is equivalent in work load to a large undergraduate course. A number of students who took the course noted that Professor Sept was an excellent teacher, with one stating "Professor Sept is one of the best professors who has taught me at the University for several reasons. As a very effective teacher, Professor Sept came prepared with organized materials and delivered lectures with clear slides that one could follow with ease." In addition to formal teaching, Professor Sept has graduated four Ph.D. students.

Research: Professor Sept's research focuses on computational modeling of molecular dynamics with special reference to cell cytoskeletal proteins, especially tubulin and actin. His work also extends to tubulin and actin filament activity in prototzoan parasites, and this work has significant application to the development of anti-parasitic drugs. He has published over 75 peer-reviewed papers, which is an outstanding record. He has published in many high impact journals including *Nature Chemistry*, *Nature Communications*, *Proceedings of the National Academy of Sciences*, *Physical Review*, *PLoS One*, and *Journal of Biological Chemistry*. His recently calculated h-index is 23. Based on his publications, as well as his reference letters, it is very clear that Professor Sept has made both a national and international

impact on his research field. In fact, although his research focuses on computational modeling, his expertise is widely sought after by both computational and experimental cell biophysicists and cell biologists.

Recent and Significant Publications:

K.M. Skillman, C.I. Ma, D.H. Fremont, K. Diraviyam, J.A. Cooper, D. Sept and L.D. Sibley, "The unusual dynamics of parasite actin result from isodesmic polymerization," *Nature Communications*, 4, 2285, 2013.

D.Y. Wong and D. Sept, "The interaction of cofilin with the actin filament," *Journal of Molecular Biology*, 413, 97-105, 2011.

H. Sim, K. Bibee, S. Wickline and D. Sept, "Pharmacokinetic modeling of tumor bioluminescence implicates efflux, and not influx, as the bigger hurdle in cancer drug therapy," *Cancer Research*, 71, 686-92, 2011.

J. Yang, G. Krishnamoorthy, A. Saxena, G. Zhang, J. Shi, H. Yang, K. Delaloye, D. Sept and J. Cui, "An epilepsy/dyskinesia-associated mutation enhances BK channel activation by potentiating Ca2+ sensing," *Neuron*, 66, 871-83, 2010.

D. Sept, and F.C. MacKintosh, "Microtubule elasticity: connecting all-atom simulations with continuum mechanics," *Physical Review Letters*, 104, 018101, 2010.

Service: Professor Sept has provided major service to his department, the College of Engineering, the university and externally. At the department level, first and foremost Professor Sept has served as associate chair for graduate education. In this position, he has led the graduate student recruitment efforts for the department. In addition, he has served as the Graduate Education Committee chair. In this position, he helped write and obtain a GAANN training award. In addition, he has chaired several faculty search committees. At the college level, Professor Sept is the faculty senate representative for the college. At the university level, he serves on the Executive Committee of the Michigan Institution of Computational Discovery and Engineering, is a member of the Biomedical Research Committee and is on the faculty search committee for the Center for Computational Medicine and Bioinformatics. Externally, Professor Sept is an associate editor of *PLoS Computational Biology* and is on the editorial board of the *Biophysical Journal* and *Cellular and Molecular Bioengineering*. Finally, Professor Sept has been involved in outreach, teaching at a number of workshops at the Pan-African Summer School, serving as a mentor for the Women in Cell Biology Committee of the American Society for Cell Biology, in addition to serving on NIH panels for workforce diversification.

External Reviewers:
Reviewer A: "Prof. Sept is a well-known leader in the field of computational modeling of the cytoskeleton and has been an active member of the community. In fact, given the regard with which he is held in the field and his accomplishments to date, I am surprised he is not already a full professor!"

Reviewer B: "I would strongly recommend promotion and tenure at the University of Michigan. I am confident that the situation would be similar at [my institution], and recent promotions to Professor have been made for candidates with very similar cases."

Reviewer C: "He is in high demand as a collaborator – experimental labs are vying for his attention – which is an ultimate sign of his impact on cell biology. I highly recommend Dr. Sept for a Full Professor position at your University."

Reviewer D: "David is one of the leading computation biologists in our field…On the basis of the quality and quantity of his research and given his institutional contributions, I think that the case for promotion of David Sept to Full Professor is very strong."

Reviewer E: "...I wholeheartedly support David's promotion to full professor at the University of Michigan. At [my institution], he would be enthusiastically and without any hesitation promoted to the same rank. Indeed, given his record of accomplishments, we would seriously think about a named professorship."

Reviewer F: "His work stands out as particularly innovative and demonstrates his desire and ability to use computational methods applied to important mechanical engineering applications. He is also an active and well-respected member of the community."

Summary of Recommendation: Professor Sept is a very prominent and very productive biomedical engineer who has made significant contributions to the field of biomedical engineering. He is an excellent teacher and mentor; and he is a leader who contributes both in external and internal service. It is with the support of the College of Engineering Executive Committee that I recommend David S. Sept for promotion to professor of biomedical engineering, with tenure, Department of Biomedical Engineering, College of Engineering and Medical School.

David C. Munson, Jr.
Robert J. Vlasic Dean of Engineering
College of Engineering

James O. Woolliscroft, M.D.
Dean, Medical School

May 2014