

PROMOTION RECOMMENDATION  
THE UNIVERSITY OF MICHIGAN  
MEDICAL SCHOOL  
DEPARTMENT OF MICROBIOLOGY AND IMMUNOLOGY

Patrick D. Schloss, Ph.D., associate professor of microbiology and immunology, with tenure, Department of Microbiology and Immunology, Medical School, is recommended for promotion to professor of microbiology and immunology, with tenure, Department of Microbiology and Immunology, Medical School.

Academic Degrees:

Ph.D.	2002	Cornell University
B.S.	1997	Cornell University

Professional Record:

2013-present	Associate Professor of Microbiology and Immunology, University of Michigan
2013-2015	Associate Professor of Civil and Environmental Engineering, University of Michigan
2009-2012	Assistant Professor, of Microbiology and Immunology, University of Michigan
2012-2013	Assistant Professor of Civil and Environmental Engineering, University of Michigan
2006-2009	Assistant Professor of Microbiology, University of Massachusetts, Amherst, MA

Summary of Evaluation:

Teaching: Dr. Schloss is a dedicated and capable teacher. Since his last promotion in 2013, he has continued to teach the departmental Microbial Informatics course to graduate students (MICRBIOL 612). This course is well received by students and Dr. Schloss has garnered positive evaluations for his teaching and organization of this course. Dr. Schloss also teaches a workshop on the use of his highly cited MOTHUR software package and its application to analysis of microbiome nucleic acid sequence data. Dr. Schloss has taught this workshop at numerous universities (including the University of Michigan), research institutes and conferences since his last promotion. Beyond the classroom, Dr. Schloss functions as a mentor for pre- and post-doctoral trainees in his laboratory and he has served and continues to serve on qualifying examination and dissertation committees for graduate students in several schools of the university.

Research: Dr. Schloss' laboratory studies the role of the microbiome in health and disease. Using a combination of bioinformatics and experimental wet lab approaches, he has contributed some of the seminal findings in this burgeoning field. He has been among the first to report upon the constitution of the microbiome in healthy individuals and those in different disease states and has reported upon the utility of microbiome data as a diagnostic tool in the clinic and as a means with which to predict disease course and outcome. Dr. Schloss' research program has earned international recognition. Since his last promotion in 2013, he has published 26 papers (18 as first or senior author), including in high impact journals such as the *Proceedings of the National Academy of Sciences USA* and *Nature*.

Over his career, his work has been very highly cited (greater than 12,500 times) and his current *h*-index is 34. In this regard he has established tremendous momentum. In 2015, his work was cited 2,693 times. He has maintained a consistently high level of funding from both the National Institutes of Health and commercial sources, both as a principal investigator and co-investigator, the latter attesting to his important role in team science research. He is currently supported by a National Institutes of Health R25 grant, entitled, “Development of reproducible informatics tools among microbiome researchers” (through August 2017) and a National Institutes of Health U01 grant, entitled, “Systems biology of *Clostridium difficile* infection” (through February 2021). Since 2013, Dr. Schloss has given 20 invited lectures at national forums. In recognition of his accomplishments, Dr. Schloss was appointed as the Frederick G. Novy Collegiate Professor of Microbiome Research in 2015 and was inducted to the American Academy of Microbiology in 2016.

#### Recent and Significant Publications:

Kozich JJ, Westcott SL, Baxter NT, Highlander SK, Schloss PD: Development of a dual-index sequencing strategy and curation pipeline for analyzing amplicon sequence data on the MiSeq Illumina sequencing platform. *Appl Environ Microbiol* 79:5112-5120, 2013.

Marino S, Baxter NT, Huffnagle GB, Petrosino JF, Schloss PD: Mathematical modeling of primary succession of murine intestinal microbiota. *Proc Natl Acad Sci U.S.A.* 111:439-444, 2014.

Ding T, Schloss PD: Dynamics and associations of microbial community types across the human body. *Nature* 509(7500): 357-360, 2014.

Schubert AM, Sinani H, Schloss PD: Antibiotic-induced alterations of the murine gut microbiota and subsequent effects on colonization resistance against *Clostridium difficile*. *mBio* 6:e00974-15, 2015.

Baxter NT, Ruffin MT 4th, Rogers MA, Schloss PD: Microbiota-based model improves the sensitivity of fecal immunochemical test for detecting colonic lesions. *Genome Med* 8:37, 2016.

Service: Since his last promotion, Dr. Schloss has served on numerous committees. At the international/national level, he has served/continues to serve as an editor for three different microbiological journals and regularly participates as a reviewer of National Institutes of Health grant applications. At the university level, he has served on the Faculty Senate Assembly and at the Medical School level, he has been an active member of the Fast Forward Host-Microbiome Initiative advisory team. For the department, he was the first director of the master’s program in Microbiology and Immunology.

#### External Reviewers:

Reviewer A: “These studies have had a very substantial impact on how research in this discipline is conducted, both nationally and internationally, because Dr. Schloss can combine great expertise in computational methods and advanced statistics with a real understanding of biology, especially microbial ecology... With his expertise working with very complex datasets, we can reliably anticipate further important achievements in the coming years.”

Reviewer B: “Dr. Patrick Schloss has been a pioneer in the development and use of software tools that are widely used in the analysis of high throughput DNA sequencing data gathered in studies of microbial communities in various environments. He has dedicated himself to the continuous

improvement of these tools, but more importantly to making them accessible to even naïve investigators everywhere... Unlike some, Dr. Schloss has brought rigor and critical thinking to microbiome research and these contributions have been widely recognized by his peers.”

Reviewer C: “In summary, I believe that Dr. Schloss is an outstanding faculty member and fully meets all of the criteria for promotion to Professor. He has been consistently creative and productive, and his work had a profound impact on the direction of the microbiome field to this point.”

Reviewer D: “Dr. Schloss is a brilliant computational environmental microbiologist who has made an absolutely enormous contribution to investigations of complex bacterial populations in experimental models and in patients with infectious diseases.”

Reviewer E: “He is fearless in highlighting the underlying assumptions which are considered the foundations of the field and then asking us to re-examine these assumptions.”

Reviewer F: “Pat Schloss is a keystone figure in microbiome research. I really can’t imagine how the field could have developed without his clear thinking and his seminal contributions.”

Summary of Recommendation:

Dr. Schloss has distinguished himself as an outstanding researcher and colleague who has earned the respect of his peers in the field and the admiration of his Michigan colleagues. He has made outstanding contributions in research, teaching and service, and he shows great promise for continued success as a scholar. I enthusiastically recommend Patrick D. Schloss, Ph.D. for promotion to professor of microbiology and immunology, with tenure, Department of Microbiology and Immunology, Medical School.



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Marschall S. Runge, M.D., Ph.D.  
Executive Vice President for Medical Affairs  
Dean, Medical School

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