Approved by the Regents
May 19, 2022

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF INTERNAL MEDICINE

Robert Woods, M.D., Ph.D., assistant professor of internal medicine, Department of Internal Medicine, Medical School, is recommended for promotion to associate professor of internal medicine, with tenure, Department of Internal Medicine, Medical School.

Academic Degrees:

M.D.	2009	University of Chicago
Ph.D.	2005	Michigan State University
B.S.	2000	Michigan State University

Professional Record:

2016 - present	Assistant Professor of Internal Medicine, University of Michigan
2014 - 2015	Clinical Lecturer of Internal Medicine, University of Michigan

Summary of Evaluation:

Teaching: While attending on the inpatient infectious diseases consult service, Dr. Woods supervises medical students, residents, and infectious diseases fellows. It is during this time that he provides direct supervision on all aspects of patient care, patient history, physical exam, as well as the clinical decision-making process. Dr. Woods also serves as a mentor for research trainees. Currently, Dr. Woods has three Ph.D. students working in his lab and he is mentoring three post-doctoral fellows. He has been invited as guest lecturer for two undergraduate courses in Canada, both discussions on the clinical aspects of antibiotic resistance evolution. These discussions were lively and very well received by undergraduate students. He has also been invited to serve as a guest lecturer in the graduate level seminar course, Science in the Clinics. Dr. Woods also served as the lead instructor for the semester long graduate course, Theory of Infectious Diseases.

Research: Dr. Woods' research focuses on the transmission and evolution within the hospital setting of Enterococcus faecium. Working with a longitudinal collection of vancomycin resistant Enterococcus (VRE) swabs (50,000 total with more than 5,000 positives for VRE) that he and his lab were able to amass. Dr. Woods utilized these swabs for genomic and microbiome focused studies of VRE transmission. His current NIH funded R01 was brought about due to this collection of VRE swabs and is a genomic epidemiology study of Enterococcus. This study is larger than any published single hospital and has the potential to be a transformative study for the integration of genomic data and transmission. His current work has also laid the foundation for improving the use of existing therapeutics and the potential for the development of novel ones. In conjunction with a colleague from Penn State University, he and Dr. Woods have been investigating the role of cholestyramine, an existing drug. When given orally, this drug can prevent the emergence of daptomycin resistant Enterococcus faecium but only when daptomycin is administered intravenously. This work has led to current collaborations in the quest for discovering and developing other anti- antibiotic drugs. Dr. Woods has published 27 peer- reviewed articles and has been invited to present his research on 15 occasions, including in India. On the national stage

Dr. Woods' expertise in the field is recognized through his peer-reviewed service for top-tier journals such as *Open Forum Infectious Disease*, *Clinical Infectious Diseases*, *PNAS*, *and PLos Pathogen*.

Recent and Significant Publications:

Kinnear CL, Hansen E, Morley VJ, Tracy KC, Forstchen M, Read AF, Woods RJ: Daptomycin treatment impacts resistance in off-target populations of vancomycin-resistant Enterococcus faecium. *PLoS Biology* 18(12): e3000987, 2020.

Kinnear CL, Patel TS, Young CL, Marshall V, Newton DW, Read AF, Woods RJ: Impact of an Antimicrobial Stewardship Intervention on Within- and Between-Patient Daptomycin Resistance Evolution in Vancomycin-Resistant Enterococcus faecium. *Antimicrobial Agents and Chemotherapy* 63(4): e01800-18, 2019.

Chanderraj R, Millar JA, Patel TS, Read AF, Washer L, Kaye KS, Woods RJ: Vancomycin-Resistant Enterococcus Acquisition in a Tertiary Care Hospital: Testing the Roles of Antibiotic Use, Proton Pump Inhibitor Use, and Colonization Pressure. *Open Forum Infect Dis* 6(4): ofz139, 2019.

McCrone JT, Woods RJ, Martin ET, Malosh RE, Monto AS, Lauring AS: Stochastic processes constrain the within and between host evolution of influenza virus. *eLife* 7:e35962, 2018.

Hansen E, Woods RJ, Read AF: How to Use a Chemotherapeutic Agent When Resistance to It Threatens the Patient *PLoS Biology* 15(2):e2001110, 2017.

Service: Dr. Woods is an active infectious diseases specialist who sees patients on the inpatient consult service as well as in the outpatient clinic. His expertise lies in general infectious diseases, but he also provides care to HIV patients. Institutionally, Dr. Woods has been a member of the multidrug resistant organism workgroup since 2018, and since 2020, has been an active member of the antimicrobial subcommittee. Dr. Woods has been appointed as section chief of Infectious Diseases at the Ann Arbor Veterans Affairs Healthcare System (AAVAHS). Within this role, he is tasked with expanding his role in educating clinical trainees, providing infectious disease care to our vulnerable veterans, and working on the development of junior faculty members at the AAVAHS.

External Reviewers:

Reviewer A: "Dr. Woods has an impressive record of securing funding. He is currently principal investigator on a large grant from NIAID on nosocomial transmission of antibiotic-resistant pathogens, and recently completed a study of the population dynamics of Rotavirus financed by an NIH K award. He has 9 submitted grants underway, 4 as PI or co-PI."

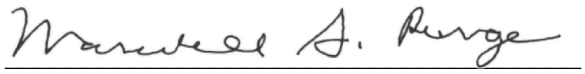
Reviewer B: "Beyond these generalities, Dr. Woods has shown himself to be a creative investigator whose work has had strong impacts on the field. I have always admired his ability to span from fundamental evolutionary biology theory to clinical impact. This takes a tremendous amount of skill and Dr. Woods has clearly excelled at producing work with clinical implication based in strong evolutionary theory."

Reviewer C: "He has demonstrated his ability to obtain external funding for important research projects and has the unique combination of clinical experience and evolutionary theory background to ask meaningful questions about the role that evolution plays in patient outcomes and how treatment regimens may be designed to minimize the risk of antimicrobial resistance evolution and therewith to improve treatment options."

Reviewer D: "I consider Bob among the very best investigators working on antibiotic treatment and the epidemiology and control of the spread of antibiotic-resistant pathogens. Investigators have recognized his research in this area in many different countries…he has a fine and growing international reputation."

Reviewer E: "Dr. Wood's [sic]work at this intersection of medicine and evolution is important and impactful. For example, he has quantitatively delineated thresholds - based on features of the pathogen, patient and drug - that determine whether moderate or aggressive antibiotic treatment will product the best clinical outcome (Hansen et al. 2017 *PLos Biol*) and has been developing promising new approaches for combatting off-target resistance evolution in the microbiome (e.g., Morley et al. 2020 *eLife*). His work is regularly published in top, general journals (e.g., *Science, PNAS*, multiple papers published in both *PLoS Biol* and *eLife*)."

Summary of Recommendation:
Dr. Woods is an exceptional clinician scientist who is making broad strides in the understanding of the transmission and evolution of Enterococcus faecium within the hospital setting. He continues to thrive as a highly valued faculty member with strength in teaching, mentorship and research endeavors. I am pleased to recommend Robert Woods, M.D., Ph.D. for promotion to associate professor of internal medicine, Department of Internal Medicine, Medical School.



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

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