

PROMOTION RECOMMENDATION
UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF MICROBIOLOGY AND IMMUNOLOGY
DEPARTMENT OF INTERNAL MEDICINE

Evan S. Snitkin, Ph.D., assistant professor of microbiology and immunology, Department of Microbiology and Immunology, and assistant professor of internal medicine, Department of Internal Medicine, Medical School, is recommended for promotion to associate professor of microbiology and immunology, with tenure, Department of Microbiology and Immunology, and associate professor of internal medicine, without tenure, Department of Internal Medicine, Medical School.

Academic Degrees:

Ph.D.	2009	Boston University
B.S.	2002	State University of New York

Professional Record:

2014-present	Assistant Professor of Microbiology and Immunology, University of Michigan
2014-present	Assistant Professor of Internal Medicine, University of Michigan

Summary of Evaluation:

Teaching: Dr. Snitkin is an enthusiastic and valued educator in the Department of Microbiology and Immunology. His central teaching responsibilities have included co-teaching MICRBIOL 612: Microbial Informatics, where he gives graduate students a hands-on experience learning and applying methods of genomic epidemiology to real datasets. Since joining the University of Michigan, he has been an active teacher by regularly giving guest lectures that cover the methods of genomic epidemiology to graduate students in the School of Public Health (EPID680 Hospital Epidemiology, EPID582: Molecular Epidemiology, and EPID509: Evolution, Behavior and Public Health). His students are engaged by his teaching style. One recent student commented that he “Uses a variety of questioning techniques that encourage independent thinking and then listens to all responses.” In addition to his classroom teaching, Dr. Snitkin has mentored or is mentoring seven undergraduate students, four medical students, six Ph.D. graduate students, and three post-doctoral fellows in his laboratory. He also serves as a committee member to seven other Ph.D. students, and is the chair of five dissertation committees.

Research: Dr. Snitkin’s research is focused on understanding the evolution of healthcare-associated pathogens specifically with regards to antibiotic resistance. His research interests allow him to successfully tackle basic and applied research problems. His background and skills have allowed him to quickly establish an independent research career at the University of Michigan research ecosystem where he has contributed to ongoing work investigating *Clostridiodes difficile*, Methicillin resistant *Staphylococcus aureus* (MRSA), carbapenem-resistant Enterobacteriaceae, and *Proteus mirabilis*. This work builds on his previous efforts as a postdoctoral research fellow at the National Institutes of Health studying the evolution of hospital outbreak of carbapenem-resistant *Klebsiella pneumoniae* and *Acinetobacter baumannii* for which he won one of four Service to America Medals awarded in 2013. Dr. Snitkin’s most notable work has focused on the transmission of carbapenem-Resistant *Klebsiella pneumoniae* (a member of the Enterobacteriaceae) in long-term acute care hospitals (LTACHS). By collecting and sequencing the genomes of isolates from LTACHS, his team was able to identify factors that contribute to the intra- and inter-facility transmission of the pathogen including exposure to carbapenem, malnutrition, and age. Through this and similar work, he has been able to develop actionable insights to track and limit the spread of transmission. Emerging work from his research group has used similar approaches to identify the genetic determinants that are associated with *Clostridiodes difficile* and *Klebsiella pneumoniae* infection severity.

Dr. Snitkin has published 42 peer-reviewed articles and has delivered 34 invited talks, including two keynote lectures (both at international meetings). Currently, his research is supported by an NIH R01 grant where he is the principal investigator, and a large NIH U01 grant where he is a co-investigator. He also receives a significant amount of funding through sub-contracts, where he is the local PI on grants funded through the NIH and Centers for Disease Control.

Recent and significant publications:

Wang J, Foxman B, Pirani A, Lapp Z, Mody L, Snitkin E: Application of combined genomic and transfer analyses to identify factors mediating regional spread of antibiotic resistant bacterial lineages. *Clin Infect Dis*: 2020. PM32239131

Saund K, Rao K, Young VB, Snitkin ES: Genetic Determinants of Trehalose Utilization Are Not Associated With Severe *Clostridium difficile* Infection Outcome. *Open Forum Infect Dis* 7(1): 548, 2020. PM31976356/PMC6966243

Han JH, Lapp Z, Bushman F, Lautenbach E, Goldstein EJC, Mattei L, Hofstaedter CE, Kim D, Nachamkin I, Garrigan C, Jain T, Bilker W, Wolford HM, Slayton RB, Wise J, Tolomeo P, Snitkin ES: Whole Genome Sequencing to Identify Drivers of Carbapenem-Resistant *Klebsiella pneumoniae* Transmission Within and Between Regional Long-Term Acute Care Hospitals. *Antimicrob Agents Chemother*: 2019. PM31451495

Snitkin ES, Won S, Pirani A, Lapp Z, Weinstein RA, Lolans K, Hayden MK: Integrated genomic and interfacility patient-transfer data reveal the transmission pathways of multidrug-resistant *Klebsiella pneumoniae* in a regional outbreak. *Sci Transl Med* 9(417): 2017. PM29167391

Wang J, Foxman B, Mody L, Snitkin ES: Network of microbial and antibiotic interactions drive colonization and infection with multidrug-resistant organisms. *Proc Natl Acad Sci USA* 114(39): 10467-10472, 2017. PM28900004/PMC5625923

Service: Dr. Snitkin has had an active role in graduate training within the Departments of Microbiology and Immunology and Computational Medicine and Bioinformatics by serving on their admissions committees and qualifying exam committees. He currently serves on the Department of Microbiology and Immunology Graduate Studies Committee, and has also served on the Awards, Promotion, and Appointments Committee. Dr. Snitkin has been a member of the Executive Committees for both the Department of Microbiology and Immunology, and the Center for Computational Medicine and Bioinformatics. Within the Medical School, Dr. Snitkin serves on the Medical School Curriculum Policy Committee. At national and international levels, he has served on several different grant review panels as an ad hoc member. He is currently an editorial board member for the *Journal of Clinical Microbiology* and has performed ad hoc review service for numerous other journals. Each of these activities provides further evidence of Dr. Snitkin's standing in his field and engagement with the broader scientific community.

External Reviewers:

Reviewer A: "Since joining UM as an Assistant Professor 2014, Dr. Snitkin has built an impressive research program as evidenced by a strong publication record and outstanding record in attracting grant funding...He is the Principal Investigator of an R01 grant and subaward PI on several other grants. These reflect a strong collaborative research program, something that is important for access to clinical sites for sample and data collection as well as expertise in related areas such as epidemiology."

Reviewer B: "Based on his publication and funding record, there is good evidence that the scientific directions of research program are evolving in relevant directions. Moreover, there is also good evidence of his unique combination of skills interfacing with the fundamental microbiological interests of several faculty within his academic department...In summary, Dr. Snitkin has a portfolio that shows clear evidence

of growth as a [junior] investigator and he is on a positive trajectory with respect to funding and publication record.”

Reviewer C: “Evan’s publication record is impressive in quantity, depth, scope and quality. His scientific expertise ranges from comparative genomics to complex analyses of genomic epidemiology, pathogen evolution, pathogen transmission in the health care environment and microbiome communities...With his development of innovative computational genomics approaches, Evan has established himself as a leader in the critical areas of pathogen evolution, transmission and epidemiology.”

Reviewer D: “The research that Dr. Snitkin is pursuing can be considered groundbreaking...Dr. Snitkin and his group are among the leading groups in this area. Dr. Snitkin has published in the highest journals over his relatively short career...I can say, without reservation that his manuscripts are well written and often must convey extremely complex concepts that many are not familiar with.”

Reviewer E: “The quality and quantity of Dr. Snitkin’s published research output is excellent...In my opinion his body of work is both coherent and innovative in tackling problems of major societal importance...Dr. Snitkin led the investigation of an outbreak of antibiotic resistant Klebsiella at the NIH hospital. Using a combination of whole genome sequencing and traditional epidemiological methods, he dissected the path of an outbreak that spread through different pathways from an index, including through the hospital ventilation system. This work was one of the first to integrate next generation sequencing for hospital transmission tracing and has been a key piece of evidence to convince skeptical epidemiologist of its vital importance for the future.”

Summary of recommendation:

Dr. Snitkin has distinguished himself as an outstanding researcher who has earned the respect of his peers in the field and his University of Michigan colleagues. He is a leader in a highly competitive and emerging field of research who is an internationally recognized and respected expert in the field of genomic epidemiology. I am pleased to recommend Evan S. Snitkin, Ph.D. for promotion to associate professor of microbiology and immunology, with tenure, Department of Microbiology and Immunology, and associate professor of internal medicine, without tenure, Department of Internal Medicine, Medical School.



Marschall S. Runge, M.D.
Executive Vice President of Academic Affairs
Dean, Medical School

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