

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

Rachel L. Zemans, M.D., associate professor of internal medicine, with tenure, Department of Internal Medicine, Medical School, is recommended for promotion to professor of internal medicine, with tenure, Department of Internal Medicine, Medical School.

Academic Degrees:

M.D.	2001	Johns Hopkins University
M.A.	1996	Stanford University
B.S.	1995	Stanford University

Professional Record:

2017-present	Associate Professor of Internal Medicine, with tenure, University of Michigan
2016-2017	Associate Professor of Medicine, University of Colorado
2009-2016	Assistant Professor of Medicine, University of Colorado
2008-2009	Instructor of Medicine, University of Colorado

Summary of Evaluation:

Teaching: Dr. Zemans considers teaching and mentoring an integral component of her professional career. She has served as a primary research mentor for numerous post-doctoral fellows, visiting scholars, and undergraduate students. She teaches these trainees laboratory techniques and scientific concepts in the field, as well as mentors them in grant writing, oral presentation, and general career development. Dr. Zemans' mentees have published papers in peer reviewed journals, have presented at national and international conferences, and have advanced to join the faculty at academic institutions. She has served on sixteen dissertation committees, and as moderator, chair, and facilitator of multiple teaching sessions for the American Thoracic Society.

Research: Dr. Zemans' research interests include acute lung injury, epithelial injury and regeneration, pulmonary fibrosis, and chronic obstructive pulmonary disease (COPD). She is currently the principal investigator of two NIH R01 awards, and an American Lung Association Innovation Award, as well as, a co-investigator of NIH R35, R13, and R01 awards, all focused on lung injury and repair. Through her research, her lab had identified β -catenin and HIF signaling as important drivers of alveolar epithelial type 2 cell production during lung repair. Dr. Zemans has developed a national reputation in the field of lung injury and repair, as evidenced by her service on editorial boards for the *American Journal of Respiratory Cell and Molecular Biology* and *JCI Insight*, invitations to serve as an ad hoc reviewer for several other journals, chair scientific sessions at conferences, participate in NIH and foundation grant review panels, and give invited talks on the national and international level. Dr. Zemans has published 57 peer reviewed articles.

Recent and Significant Publications:

Jiang P, Gil de Rubio R, Hrycaj SM, Gurczynski SJ, Riemondy KA, Moore BB, Omary MB, Ridge KM, Zemans RL: Ineffectual AEC2-to-AEC1 Differentiation in IPF Characterized by Persistent KRT8^{hi} Transitional State. *Am J Respir Crit Care Med* 2020; In Press.

Lin WC, Gowdy KM, Madenspacher J, Zemans RL, Yamamoto K, Lyons-Cohen MR, Nakano H, Janardhan K, Williams CJ, Cook DN, Mizgerd JP, Fessler MB: Epithelial Membrane Protein 2 Governs Transepithelial Migration of Neutrophils into the Airspace. *J Clin Invest* 30(1):157-170, 2020.

Smith C, Tyrell D, Kulkarni U, Wood S, Zemans RL, Bucala R, Goldstein DR: Macrophage migration inhibitory factor enhances influenza-associated mortality in mice. *JCI Insight* 4:13, 2019.

Riemondy KA, Jansing NL, Jiang P, Redente EF, Gillen AE, Fu R, Miller AJ, Spence JR, Gerber AN, Hesselberth JR, Zemans RL. Single Cell RNA Sequencing Identifies TGF β as a Key Regenerative Cue following LPS-induced Lung Injury. *JCI Insight*, 26:5, 2019.

Jansing NL, Patel N, McClendon J, Redente EF, Henson PM, Tudor RM, Hyde DM, Nyengaard JR, Zemans RL. Flow Cytometry Underestimates and Planimetry Overestimates Alveolar Epithelial Type 2 Cell Expansion after Lung Injury. *Am J Respir Crit Care Med*, 198:390-392, 2018.

Service: Dr. Zemans' administrative contributions have included serving on multiple institutional committees and national and international program committees, including the steering committee for the National Thomas L. Petty Aspen Lung Conference at the University of Colorado, Denver. Within the institution, Dr. Zemans is an interviewer for the Internal Medicine Residency Program, and Pulmonary Fellowship Program and is a member of the University of Michigan's Visiting Professor Committee. She is the recipient of many awards, most recently the Early Career Achievement Award from the American Thoracic Society, and a Short Talk Award from the FASEB Summer Conference on Lung Epithelium in Health and Disease.

External Reviewers:

Reviewer A: "Throughout her career, Dr. Zemans has been a productive and innovative physician scientist who has made valuable contributions in a number of areas pertinent to pulmonary and critical care medicine. The overall scholarly impact of her research output has been excellent. Much of her early work focused on various aspects of neutrophil and lung epithelial signaling and interactions, which resulted in several impactful publications."

Reviewer B: "Dr Zemans' [sic] publishes in very highly ranked journals, underscoring the rigor, importance and impact of her research program. She also has a considerable body of thoughtful review articles and editorials. Of note is a recent review co-authored with Dr. Michael Matthay and others on ARDS in Nature Reviews Disease Primers in 2019. In addition to her research program and publication track record, Dr. Zemans has a record of service commensurate with a full Professor, including participation in multiple study sections and peer review of manuscript submissions to many high profile journals. Being a member of the JCI Consulting Editorial Board

and the Editorial Board of the American Journal of Respiratory Cell and Molecular Biology (Red Journal) are honors as well as opportunities for service.”

Reviewer C: “Her standing, in relation to others in her peer group, is outstanding. Dr. Zeman [sic] is highly regarded within the field of lung epithelial injury and repair and has served on numerous committees at the institutional, national and international level. Dr. Zemans has been continuously funded by the NIH for her work and currently holds two R01’s [sic] as principle investigator for studies examining repair and regeneration of the alveolar epithelium after lung injury.”

Reviewer D: “She has been very productive since achieving the rank of Associate Professor. I note that she lists over 20 publications since 2017. Many of these are in top flight journals including the Journal of Clinical investigation, JCI Insight, the American Journal of Pathology, the American Journal of Respiratory and Critical Care Medicine and the American Journal of Physiology (lung cellular and molecular physiology). The specific articles listed in her promotion materials are excellent examples demonstrating the high level of her published work. Her JCI Insight manuscript (Riemondy et al. 2019) is a tour de force that opened up exciting new lines of investigation concerning the local signaling networks that maintain the alveolar epithelium in the context of lung injury.”

Reviewer E: “She is currently serving as PI on two R01’s, [sic] and as a co-Investigator on three other NIH-funded projects, which is outstanding. It is a testament to her dedication and resourcefulness that she has previously obtained funding from many different sources given the current highly competitive environment...Based upon the level of involvement and the importance of the activities, I would rate Dr. Zeman’s [sic] contributions as excellent relative to faculty at a comparable rank and in similar positions nationally, particularly among physician scientists. While I have not observed Rachel in the classroom setting, I have seen her give talks at meetings, and she gave well-organized and clear presentations. I would guess that this translates to her effectiveness as a teacher as well. She also has an impressive list of mentees, and I am confident that she is an effective mentor.”

Summary of Recommendation:

Dr. Zemans is an enthusiastic physician scientist who has made outstanding contributions through her research on the mechanisms of regeneration of the alveolar epithelium after lung injury. She is well-funded and an outstanding educator. I am pleased to recommend Rachel L. Zemans, M.D. for promotion to professor of internal medicine, with tenure, 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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