

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

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

Academic Degrees:

Ph.D.	1997	University Rene Descartes, Paris, France
M.S.	1993	University Rene Descartes, Paris, France
B.S.	1992	University of USTHB, Algiers, Algeria

Professional Record:

2007-present	Assistant Professor of Microbiology and Immunology, University of Michigan
2003-2007	Associate Research Scientist, Yale University School of Medicine

Summary of Evaluation:

Teaching: Dr. Laouar has taught immunology to both graduate students (Microbiology 640 and Immunology 851) and undergraduate students (Microbiology 301) at the University of Michigan. Her current teaching of Microbiology 301 involves approximately 20 hours of contact time each year. She has invested considerable efforts to develop immunology lectures for Microbiology 301 that are broadly accessible to a diverse group of students. Dr. Laouar has been recognized by students taking Microbiology 301 as an enthusiastic and effective instructor who takes trouble to reinforce concepts. In recognition of her contributions to this course and the highly positive evaluations, she recently received a Medical School Endowment for the Basic Sciences teaching award. She has also served as the director for Microbiology 812, a departmental student seminar series. She implemented important changes to the organization of this course, including abstract submissions prior to student presentations. In addition to classroom activities, Dr. Laouar has trained 19 undergraduate students, four master students, seven post-doctoral fellows and four rotating graduate students in her laboratory. It has in general been difficult for immunology faculty to attract graduate students to their laboratories, as the students recruited to the department are typically interested in areas related to microbial pathogenesis research. Further, most students recruited to the Graduate Program in Immunology typically find their homes in laboratories within clinical departments. Thus, immunology faculty are more reliant on post-doctoral fellows and research assistants as trainees, a situation that can be particularly challenging for junior immunology faculty. Dr. Laouar has successfully navigated this challenge and has recruited talented trainees to her laboratory, including post-doctoral fellows, and has built a vibrant laboratory with dedicated scientists, who are publishing well. In fact, some of her undergraduate students stayed on to work as research assistants following their graduation and have published first author research papers in high impact journals, thus attesting to the quality of their training.

Research: Dr. Laouar has built strong research themes related to (i) the role of transforming growth factor- β (TGF- β) in the development and functions of immune cell subsets and (ii) characterizations of novel innate immune cell subsets. During her postdoctoral work, Dr. Laouar used mouse models for blocking TGF- β signaling in different immune cell subsets and elucidated a role for natural killer (NK) cell-derived TGF- β in the control of T helper type 1 cell development. Since starting her own laboratory at the University of Michigan, Dr. Laouar has built on many important aspects of the TGF- β . Her lab showed (i) a key role for TGF- β signaling in controlling NK cell maturation in mice and (ii) that TGF- β signaling is responsible for NK unresponsiveness early in mouse life. When TGF- β signaling is blocked, NK cells in newborn mice are more functional for the control of murine cytomegalovirus infection.

Dr. Laouar's lab has also shown the relevance of dendritic cell (DC) TGF- β signaling in the control of autoimmune encephalomyelitis (EAE) in mice. In the absence of DC, TGF- β signaling potent T helper type 17 differentiation and DC expansion in the inflamed CNS are shown to occur. More recent studies elucidate a role for DC TGF- β signaling in determining homeostasis of innate lymphoid cell type 3 (ILC3) in the intestine, and for ILC3-mediated immunity to *Citrobacter rodentium*. Thus, using mouse models, a TGF- β -related functional theme has been pioneered within Dr. Laouar's research program, including assessments of TGF- β effects on NK cell, T cell and ILC development/differentiation. Within these studies, her research group has elucidated the cellular mechanisms responsible for the functional effects of TGF- β , including demonstrations of pathway relevance to pathogen immunity and autoimmunity.

Within the second research theme, Dr. Laouar's lab has characterized novel innate immune cell subsets, including a poorly understood CD1d-unrestricted natural killer T (NKT) cell subset and a CD8+ NKT cell subset. As the complexity of the innate immune cell subsets is unraveled in the current literature, Dr. Laouar's contributions are at the forefront of the field for defining the phenotypic and functional characterization of new NKT cell subsets.

Overall, Dr. Laouar's work fits the important niche area of innate immunity and its bridge to adaptive immunity. Dr. Laouar has 24 publications to date. Her publications as an independent investigator include a large number of experiments within the main body of each paper and substantial supplementary information. Dr. Laouar brings a model of scholarship to the department that includes a thorough and incisive approach to science, with a focus on a smaller number of publications, but each containing significant work within each publication, and resulting high impact papers. Her citations exceed 1700 to date. She is currently the principal investigator of an R01 grant and in the past she has held a foundation grant from the National Multiple Sclerosis Society and a pilot grant from NIDDK, NIH. Her funding has been continuous and strong during a time of stringent resources and funding lapses for many scientists. The combination of the two research themes that Dr. Laouar has developed forms a solid foundation for continued funding and new funding opportunities.

Recent and significant publications:

Laouar Y, Town T, Jeng D, Tran E, Wan Y, Kuchroo VK, Flavell RA: TGF-beta signaling in dendritic cells is a prerequisite for the control of autoimmune encephalomyelitis. *Proc Nat Acad Sci* 105:10865-10870, 2008.

Marcoe JP, Lim JR, Schaubert KL, Fodil-Cornu N, Matka M, McCubbrey AL, Farr AR, Vidal SM, Laouar Y: TGF- β is responsible for NK cell immaturity during ontogeny and increased susceptibility to infection during mouse infancy. *Nat Immunol* 13:843-850, 2012.

Speck S, Lim J, Shelake S, Matka M, Stoddard J, Farr A, Kuchroo V, Laouar Y: TGF- β signaling initiated in dendritic cells instructs suppressive effects on Th17 differentiation at the site of neuroinflammation. *PLoS One* 9:e102390, 2014.

Farr AR, Wu W, Choi B, Cavalcoli JD, Laouar Y: CD1d-unrestricted NKT cells are endowed with a hybrid function far superior than that of iNKT cells. *Proc Nat Acad Sci* 111:12841-12846, 2014.

Seregin SS, Chen GY, Laouar Y: Dissecting CD8⁺ NKT Cell Responses to Listeria Infection Reveals a Component of Innate Resistance. *J Immunol* 195:1112-1120, 2015.

Service: At the institutional level, Dr. Laouar has served on the Graduate Student Admissions Committees of the Microbiology and Immunology and Immunology Programs, the Preliminary Examination Committee of the Immunology Program and the Appointments, Promotions and Awards Committee of the Department of Microbiology and Immunology. She has also functioned as a reviewer of internal pilot and post-doctoral grant applications. Nationally, she has served on the council of the Autumn Immunology Conference (AIC), held annually in Chicago, and as session chair at an AIC and an American Society for Microbiology meeting. As an extramural grant reviewer, Dr. Laouar reviewed challenge grants for the CIGP NIH study section in 2009 and since 2013 has reviewed R01- and P01-equivalent grants for the French National Research Agency (ANR). She served on the Innate Immunity and Inflammation (III) NIH study section as an ad hoc reviewer for the October 2015 review cycle. In addition to her grant reviewing activities, Dr. Laouar has also served as a reviewer for ten different journals and is an editorial board member for two immunology journals. Thus, Dr. Laouar has been and continues to be active in several different service areas locally and nationally, which provide strong evidence of national and international recognition of her scholarship and expertise.

External Reviewers:

Reviewer A: "Yasmina clearly expects her papers to be published in the most competitive journals. She has done a good job achieving this goal, with one paper from her own laboratory appearing in *Nature Immunology* and another in *Proceedings of the National Academy of Sciences, USA*....A quick analysis of her publication record on the ISI Web of Science shows that she has over 1700 career citations of her publications and an H-index of 14. Her work seems to be in an active period of appreciation with the highest level of citations appearing since her arrival at the University of Michigan."

Reviewer B: "Let me say outright that Yasmina's science is original and has influenced the research of many laboratories in the field of cytokines and immunology including mine....Overall, Yasmina clearly possesses unique scientific qualities that are necessary to be a leader in scientific research. She is bright and has a strong, independent point of view as well as the ability to identify important problems and resolutely pursue original ideas."

Reviewer C: "Yasmina's publications are thoughtful and well-executed. She is a leader in the TGF- β field as evidenced not only by her publications, but the many coauthor studies published on the topic. In addition, many of Yasmina's papers have been highly cited. I am confident that Yasmina

will continue to contribute to the TGF- β field and will continue to expand her immunologic interests. A researcher of Yamsina's caliber is an important attribute of all training programs."

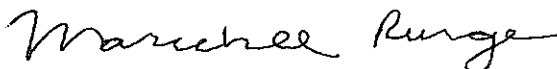
Reviewer D: "This level of scholarship and productivity, particularly because of the high profile publications, would certainly be sufficient to satisfy the requirement for research achievements for promotion to Associate Professor and for tenure at my own institution. ...She has R01 funding, in itself a significant achievement for junior faculty at this time."

Reviewer E: "She has a consistent track record of publication since establishing her independent lab, with her observations that TGF- β regulates the development of mouse NK cells after birth being her best-known accomplishment."

Reviewer F: "...Dr. Laouar's research has been productive, with one high-impact paper. Her research has been supported by external funding and the likelihood for continued funding is strong. She is committed to educating the next generation of researchers and she provides service to the research community and her institution. For these reasons, I support her promotion to Associate Professor with tenure."

Summary of Recommendation:

Dr. Laouar has distinguished herself as an outstanding researcher in immunology and built two distinct scientific themes in her laboratory. The scientific content of each of her publications is highly significant. She has made outstanding contributions to undergraduate level instruction both in the classroom and in her laboratory. She is a conscientious member of departmental committees and is serving the immunology community at the international level. Thus, I strongly recommend Yasmina Laouar, Ph.D. for promotion to associate professor of microbiology and immunology, with tenure, Department of Microbiology and Immunology, Medical School.



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

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