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

Approved by the Regents
May 20, 2010

Malini Raghavan, 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:

1991	Ph.D.	Princeton University
1985	M.Sc.	Indian Institute of Technology, Kanpur India
1983	B.Sc.	Women's Christian College, Madras India

Professional Record:

2003-present	Associate Professor of Microbiology and Immunology, University of Michigan
1996-2003	Assistant Professor of Microbiology and Immunology, University of Michigan

Summary of Evaluation:

Teaching: Dr. Raghavan highly values teaching, which has been demonstrated throughout her career. She cherishes opportunities to teach immunology to undergraduate and graduate students at the University of Michigan, and to students around the globe. Dr. Raghavan created a new course "Molecular Recognition in the Immune System" in 2000 for graduate students and subsequently taught the course until 2008. This course together with two other immunology modules became "Molecular and Cellular Immunology" in 2008, for which she has served as a director for two years. She also has been teaching undergraduate students "Introduction to Medical Microbiology" since 2000. In both courses, Dr. Raghavan was highly respected by students and received excellent evaluations. In the summer of 2009, Dr. Raghavan taught immunology to students at the National Center for Biological Sciences in India diversifying and extending opportunities for scientific education to students around the globe. Dr. Raghavan has mentored one research investigator, five fellows, eight graduate students (M.S. and Ph.D.) as well as 13 undergraduate students. Dr. Raghavan's excellence in training and mentoring in the laboratory was demonstrated by her trainees' shared voice that she was always encouraging, creative in her teaching, and that they enjoyed working with her immensely. She also has gone an extra mile with her care and mentorship for undergraduate students. Dr. Raghavan organized a two-day event comprised of 11 short talks presented by 11 undergraduate students and one high school student who spent the summer in the laboratory of investigators funded by American Recovery and Reinvestment Act supplement grants.

Research: Dr. Raghavan's professional expertise spans a range of topics including the mechanistic biochemistry of proteins relevant to the immune response, structural biology, immunological mechanisms of induction of CD8 T cell responses, and immunogenetics as related to the impact of MHC class I polymorphisms on disease outcomes. In particular, her research focuses on the assembly of MHC class I molecules, including mechanisms of function of the MHC class I-dedicated assembly factors (transporter associated with antigen processing (TAP) and tapasin) and the role of MHC class I polymorphisms on intracellular trafficking and cell surface expression of MHC class I molecules. Dr. Raghavan has made a significant amount of contributions to the body of knowledge pertaining to the mechanisms of function of TAP and tapasin. This set of related projects has been continuously supported by an NIH grant since 1998 (*Interactions and Mechanisms of Function of the TAP complex)*, which testifies to her excellence in the field. Dr. Raghavan also seeks to understand the workings of the endoplasmic reticulum (ER) chaperone calreticulin, a key component of the quality control of protein folding in the ER. Her paper published in *Molecular Cell* (Rizvi et al., 2004) is truly seminal work that shows the linkage of cell stress-induced conformational changes in calreticulin to altered activity. This research is also supported by an NIH grant (*Calreticulin's functions in the Adaptive Immune response*). Her works have been published in high impact journals including *Molecular Cell, Journal of Biological Chemistry, Journal of Immunology,* and *Proceedings of the National Academy of Science (USA).* The majority of Dr. Raghavan's papers are in top journals highlighting their excellent quality, although on average her numbers of publications may seem lower compared to others at her state of career. This reflects her thoroughness and attention to detail and her pursuit of high quality work. Dr. Raghavan is highly respected by her peers in the field as demonstrated by her invitation to speak at other institutions (Stanford University, Princeton University, and California Institute of Technology) and premier international meetings (Gordon Research Conferences and International meeting on Antigen Processing and Presentation).

Recent and Significant Publications:

Rizvi SM, Raghavan M: Direct peptide regulatable interactions between MHC class I molecules and tapasin. *Proc Natl Acad Sci* 103:18220-18225, 2006.

Perria CL, Rajamanickam V, Lapinksi PE, Raghavan M: Catalytic site modifications of TAP1 and TAP2 and their functional consequences. *J Biol Chem* 281:39839-39851, 2006.

Thammavongsa V, Raghuraman G, Filzen TM, Collins KL, Raghavan M: HLA-B44 polymorphisms at position 116 of the heavy chain influence TAP complex binding via an effect on peptide occupancy. *J Immunol* 177:3150-3161, 2006.

Thammavongsa V, Mancino M, Raghavan M: Polypeptide substrate recognition by calnexin requires specific conformations of the calnexin protein. *J Biol Chem* 280:33497-33505, 2005.

Rizvi SM, Mancino L, Thammavongsa V, Cantley RL, Raghavan M: A polypeptide binding conformation of calreticulin is induced by heat-shock, calcium depletion, or by deletion of the C-terminal acidic domain. *Mol Cell* 15(6), 913-923, 2004.

Service: Dr. Raghavan has an outstanding record of service at all levels. In the Department, she has served on major committees including the Appointments, Promotions, and Awards Committee and the Graduate Studies Committee. In addition, she served on the Virologists Search Advisory Committee and the Immunologist Search Committee. At the school level, Dr. Raghavan has served on the Biomedical Research Council, STEP (the Science and Technology Excellence Program), and the Research Assessment Team for NCRC. Dr. Raghavan has also participated in committees of other programs in the medical school including the Admission Committee of Biophysics Research Division, the Graduate Studies Committee of the Immunology Program, the Program Committee of the Cellular Biotechnology Training Program, and the Steering Committee for the Rheumatic Diseases Core Center. Nationally, Dr. Raghavan serves on the NIH study section Cellular and Molecular Immunology A. She has chaired a session of the International Calreticulin Workshop this year, which clearly demonstrates the international recognition of her status.

External Reviews:

Reviewer A: "She brings a unique expertise to bear on several important problems in immunology and she fully meets all criteria of excellence in scholarship, significance of research and national recognition."

Reviewer B: "Dr. Raghavan's service to the institution is strong and demonstrates a clear effort to help her department and the University flourish...Her students and fellows commented that she was always encouraging, creative in her teaching, and that they enjoyed working with her immensely...Without a doubt, Dr. Raghavan's packet for promotion and tenure is one of the strongest I have reviewed in the past several years."

Reviewer C: "Her approach to science, insistence on excellence, and perseverance has been exemplary and she is one of the most creative and talented scientists in the field of molecular immunology. Dr. Raghavan is well recognized nationally and internationally."

Reviewer D: "This is a highly competitive area of research with competition from several prominent groups...she has made steady progress and published several papers in good peer reviewed journals."

Reviewer E: "She has served productively on the University of Michigan faculty for 13 years, and during this time she has distinguished herself in a number of ways, especially by elegant and important biochemical work, and by being an exceptionally good citizen with regard to service and mentoring students at different levels."

Reviewer F: "She is well funded. I would rate her scholarship overall as excellent and she compares very favorably with her peers."

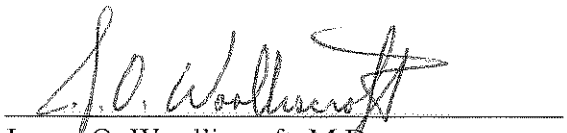
Reviewer G: "...with regard to her commitment and contributions to the University, she appears to be outstanding. Dr. Raghavan appears to be a key member of the graduate training faculty. She has taught steadily throughout her career, and now has assumed leadership roles in several key activities and courses. She has been a trainer of graduate students and undergraduates and appears to be quite generous in her service on graduate dissertation committees."

Reviewer H: "Malini has been an excellent, even tenacious member of the study section, bringing considerable expertise and insight to the review process...She has rightfully earned considerable respect from her peers in this venue alone."

Reviewer I: "During her time at Michigan, Malini has established her lab as a world leader in understanding the assembly and loading of MHC class I molecules."

Summary of Recommendation:

Dr. Raghavan is an outstanding and internationally recognized investigator in the field of immunology. She has demonstrated her excellence in teaching and mentoring as well as in service to the Department and the University. I wholeheartedly support Dr. Raghavan for promotion to professor of microbiology and immunology.



James O. Woolliscroft, M.D.
Dean
Lyle C. Roll Professor of Medicine

May 2010