

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF PATHOLOGY
DEPARTMENT OF HUMAN GENETICS

Thomas E. Wilson, M.D., Ph.D., associate professor of pathology, with tenure, Department of Pathology, and associate professor of human genetics, without tenure, Department of Human Genetics, Medical School, is recommended for promotion to professor of pathology, with tenure, Department of Pathology, and professor of human genetics, without tenure, Department of Human Genetics, Medical School.

Academic Degrees:

Ph.D.	1994	Washington University, St. Louis, MO
M.D.	1994	Washington University, St. Louis, MO
B.S	1987	University of Wisconsin

Professional Record:

2006-present	Associate Professor of Pathology, University of Michigan
2009-present	Associate Professor of Human Genetics, University of Michigan

Summary of Evaluation:

Teaching: Dr. Wilson teaches undergraduates, graduate students, post-graduate students, and residents and fellows in pathology. His teaching is predominantly in lectures and small group discussions and in diagnostic activities in the clinical molecular and genetics laboratory. His teaching involves approximately 80 contact hours per year covering approximately 170 graduate students, 35 residents and fellows in pathology and 10 MSTP students. This does not include the individual instruction in the laboratory settings for students in his research laboratory. Since his promotion to associate professor, he has been a member of 30 dissertation committees and the chair of five of these. In 2014, he received the Endowment for the Basic Sciences Faculty Teaching Award in Human Genetics. Dr. Wilson is an unusually enthusiastic and innovative teacher whose approach is to stimulate interaction among those attending his presentations. In formal teaching evaluations, his scores are consistently in the 4-4.5 range on a 5-point scale. Dr. Wilson has been instrumental in curriculum design and administration. He is a member of the MSTP Career Advisory Panel, the Pathology Graduate Program Curriculum Committee, the Neel Fellowship in Genetic Counseling Selection Committee, the Human Genetics Education Curriculum Committee and Training Program, the Oversight Committee of the Michigan Translational Research Education Certificate, and the Program Committee and Pilot Training Program in Translational Pathology. He continually revises new curricula that mix didactic reading, comprehensive hand-outs, literature review and extensive discussion time coupled with laboratory and computational exercises for post-doctoral fellows. He completely revised the human genetics 541 syllabus to include all modern molecular genetic subjects. He helped create

a new course on the introduction to translational research, and in conjunction with two other members of the Department of pathology, he developed a new course in translational pathology, a unique course that combines graduate students and residents in pathology who work together on specific whole class presentations. This course is now in its second year.

Research: Dr. Wilson's research is directed at genetic analyses of DNA double stranded break repair by non-homologous adjoining, chromosome instability and copy number variation in cancer and human genetic diseases, nascent-RNA sequencing via the Bru-seq technology with bioinformatics applications for understanding transcription through analysis of novel data classes, and yeast mutation detection through novel genomic and bioinformatics approaches. Since his promotion to associate professor, he has been a co-author on 29 publications in high-impact peer-reviewed journals for which he has been the first or senior author on 11. He has also had three additional book chapters. His work has been continually funded from external sources, predominantly from the NIH, but also from the American Cancer Society and the FDA. He has clear evidence of national and international recognition with numerous invitations to present his work at other venues including the University of Minnesota, Columbia University, the University of Colorado, Pennsylvania State University, the University of California at San Diego and at international meetings in Slovakia, Brazil and Canada. He has been a regular member of NIH study sections involving molecular genetics and the nucleome program. He has been an ad hoc reviewer for at least 27 of the most prestigious journals including *EMBO Journal*, *PLoS Genetics*, *Genobiology*, *Cell*, *Oncogene*, and *Science*.

Recent and Significant Publications:

Birkeland SR, Jin N, Ozdemir AC, Lyons RH, Weisman LS, Wilson TE: Discovery of mutations in *Saccharomyces cerevisiae* by pooled linkage analysis and whole-genome sequencing. *Genetics* 186:1127-1137, 2010.

Paulsen MT, Veloso A, Prasad J, Bedi K, Ljungman EA, Tsan YC, Chang CW, Tarrier B, Washburn JG, Lyons R, Robinson DR, Kumar-Sinha C, Wilson TE, Ljungman M: Coordinated regulation of synthesis and stability of RNA during the acute TNF-induced proinflammatory response. *Proc Natl Acad Sci USA* 110:2240-2245, 2013.

Chiruvella KK, Liang Z, Birkeland SR, Basrur V, Wilson TE: *Saccharomyces cerevisiae* DNA ligase IV supports imprecise end joining independently of its catalytic activity. *PLoS Genet* 9:e1003599, 2013.

Chiruvella KK, Liang Z, Wilson TE: Repair of double-strand breaks by end joining. *Cold Spring Harb Perspect Biol* 5:a012757, 2013.

Wilson TE, Arlt MF, Park SH, Rajendran S, Paulsen M, Ljungman M, Glover TW: Large transcription units unify copy number variants and common fragile sites arising under replication stress. *Genome Res* 25:189-200, 2015.

Service: At the University of Michigan, he has been on the Scientific Advisory Committee for the GI SPORE, the CMV Candidate Requirements Review Committee, the Department of

Pathology Research Incentive Compensation Committee, the Human Genetics Education/Curriculum Committee and the Human Genetics Training Program, the Pilot Training Program in Translational Pathology and the Biological Sciences Scholars Program Committee. Nationally, he has been actively involved with the Environmental Mutagenesis and Genomic Society where he has been a member of the counsel, the executive board, chair of the Abstract Review Committee and chair of the annual meeting. He was given the service award from this organization in 2013, and he was elected as vice president in 2014, a position leading to president in three years.

Dr. Wilson is a highly trained and highly experienced clinical pathologist with expertise in molecular and genetic diagnostics. He signs out cases in the molecular diagnostics laboratory on a regular basis, especially in the area of somatic cancer genetics. He has held administrative positions in that laboratory, serving as the interim director from October 2006 through June 2007, and since that time, he has been the associate director of that laboratory. He is regarded as a first class molecular and genetic diagnostician.

External Reviewers:

Reviewer A: "...Dr. Wilson has clearly maintained a high-quality research program and demonstrated continued scientific and scholarly excellence in the form of rigorous publication. He has a sustained track record of funding...His contributions to the teaching mission and organizational service at the University of Michigan are especially exceptional."

Reviewer B: "Dr. Wilson has been one of the most important figures in the study of nonhomologous end joining both in yeast and in mammalian systems. ...Tom Wilson stands as a leader in the study of end-joining in its many aspects. His review articles are thoughtful and his attention to detail (the unanticipated role of DNA Ligase 4 in imprecise end-joining as one example) has been invaluable to the community of interested scholars."

Reviewer C: "One notable feature of his work is the multidisciplinary approach utilized. His group has combined advanced molecular biologic systems with development of new assays and cell biology....This association has been very productive and has led to several recent and important contributions to the field relating to how fragile sites activate copy number variation. These findings are highly relevant to the role of fragile sites as 'hotspots' in the human genome for driving cancer-associated rearrangements. As a result, Dr. Wilson's research is of direct relevance not only to the basic science community, but also in the medical/clinical arena."

Reviewer D: "These studies (on repair of DNA strand breaks) have taught us about the mechanisms by which the DNA ends are aligned and are processed to allow both polymerization and ligation. The studies are published in the most rigorously peer-reviewed journals in the field of DNA repair, attesting to their quality. They have established a reputation for Dr. Wilson as one of the top investigators of NHEJ in the world. Evidence for this includes his publication of five invited review articles on NHEJ. ...I have found him to be articulate, forthcoming with his own ideas, highly interactive and personable. He has strong intellectual and technical abilities, and he is capable of identifying key concepts and testing these with well-designed and beautifully


executed experiments. In my opinion, Dr. Wilson is a successful senior independent investigator of the first rank.”

Reviewer E: “Dr. Wilson has continued to show enormous creativity in experimental design, and his recent studies have provided new insight into the functional domains of several critical end joining proteins and how their activities are coordinated at DNA ends. ...Dr. Wilson has been invited to write several prominent reviews on the mechanisms of NHEJ, an acknowledgement of his leadership in the field.”

Reviewer F: “Dr. Wilson has been active as [an] ad hoc reviewer for numerous journals, including top tier journals such as *Cell*, *Science* and *Nature Structural and Molecular Biology*, and also for NIH study sections. In addition, he has been invited to give presentations at other academic institutions and at national and international venues and has held leadership positions in the *Environmental Mutagenesis and Genomics Society*. All of these activities are consistent with Dr. Wilson’s national and international reputation as a leading research scientist in the DNA repair field.”

Summary of Recommendation:

Dr. Wilson is an internationally known scientist with expertise in genetics. He is a superb teacher, and outstanding mentor and a leader in the field with contributions to his institution and to his national organization. I am pleased to recommend Thomas E. Wilson, M.D., Ph.D. for promotion to professor of pathology, with tenure, Department of Pathology, and professor of human genetics, without tenure, Department of Human Genetics, Medical School.



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

May 2016