

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF PEDIATRICS
DEPARTMENT OF PATHOLOGY

Elizabeth Lawlor, M.D., Ph.D., associate professor of pediatrics, with tenure, Department of Pediatrics, and associate professor of pathology, without tenure, Department of Pathology, Medical School, is recommended for promotion to professor of pediatrics, with tenure, Department of Pediatrics, and professor of pathology, without tenure, Department of Pathology, Medical School.

Academic Degrees:

Ph.D.	2001	University of British Columbia
M.D.	1989	McMaster University
B.Sc.	1986	McMaster University

Professional Record:

2011-present	Associate Professor of Pediatrics, University of Michigan
2011-present	Associate Professor of Pathology, University of Michigan
2010-2011	Assistant Professor of Pediatrics, University of Michigan
2010-2011	Assistant Professor of Pathology, University of Michigan
2004-2009	Research Scientist of Pediatric Hematology-Oncology, Saban Research Institute
2004-2009	Assistant Professor of Pediatrics, University of Southern California
2004-2009	Assistant Professor of Pathology, University of Southern California

Summary of Evaluation:

Teaching: Dr. Lawlor has been an active educator throughout her career. She is the associate director for education and training at the University of Michigan Comprehensive Cancer Center (UMCCC) and has served as the director of the Cancer Biology Ph.D. Program at the Rackham Graduate School. She is responsible for curriculum development and review, faculty oversight, and trainee mentoring, as related to research education of students and post-doctoral fellows who are pursuing advanced training in our Ph.D. and NCI-funded T32 training programs. Dr. Lawlor has served as a mentor to scholars in the Biomedical Research Training Program. She is an active member of the cancer biology, molecular and cellular pathology, and Medical Scientist Training Program (MSTP) faculty and is listed as faculty on each of their T32 grants. In addition to laboratory based mentoring, she has developed the curriculum for and taught Cancer Bio554 and Cancer Bio880 and has taught Pathology 582. She has received highly favorable feedback from learners and mentees and her evaluations reflect excellence in teaching.

Research: Dr. Lawlor is one of the preeminent experts in the field of biology and epigenetic regulation of Ewing's Sarcoma. Her research focuses on faulty regulation of normal stem cell and developmental processes contributing to the initiation and progression of Ewing sarcoma. Dr. Lawlor accomplishes this by investigating the role of HOXD13 in the pathogenesis of Ewing sarcoma, which presents a previously unrecognized tumor-specific vulnerability that can be therapeutically exploited. She is

defining the function of menin which functions as a central oncogenic node in Ewing sarcoma. Functions in the tumor pathogenesis will help to advance development of therapeutic strategies. Dr. Lawlor is also focusing on cell plasticity and tumor cell heterogeneity as a key driver of metastatic progression, with the hypothesis that activation of Wnt/beta-catenin in cell subpopulations leads to secretion of cellular proteins that remodel the local bone TME to support metastasis. Dr. Lawlor has been very productive in her research and has published 64 peer-reviewed articles in prestigious journals, including *Nature Medicine*, the *Journal of Clinical Oncology*, *Stem Cells and Development* and *Cancer Research*. She has been continuously funded, as is currently the principal investigator of two NIH R01 grants, four foundation grants, a co-principal investigator of one R01 grant, and a co-investigator of one R01 grant.

Recent and Significant Publications:

Svoboda LK, The SS, Kerk S, Sud S, Zebolsky A, Treichel S, Thomas D, Halbrook C, Lee HJ, Kremer D, Zhang L, Bankhead A, Magnuson B, Ljungman M, Cierpicki T, Grembecka J, Lyssiotis, C, Lawlor ER: Menin regulates the serine biosynthetic pathway in Ewing sarcoma. *J Pathol* 245(3):324-336, 2018.

Hawkins AG, Basrur V, da Veiga Leprevost F, Pedersen EA, Sperring C, Nesvizhskii AI, Lawlor ER: The Ewing sarcoma secretome and its response to activation of Wnt/beta-catenin signaling. *Mol Cell Proteomics* 17(5):901-912, 2018.

Krook MA, Hawkins AG, Patel RM, Lucas DR, Van Noord R, Chugh R, and Lawlor ER: A bivalent promoter contributes to stress-induced plasticity of CXCR4 in Ewing sarcoma. *Oncotarget*. 7(38):61775-61788, 2016.

Pedersen EA, Menon R, Bailey KM, Thomas DG, Van Noord RA, Tran J, Wang H, Qu P, Hoering A, Fearon ER, Chugh R, Lawlor ER: Activation of Wnt/beta-catenin in Ewing sarcoma cells antagonizes EWS/ETS function and promotes phenotypic transition to more metastatic cell states. *Cancer Res* 76(17):5040-53, 2016.

Ryland KE, Svoboda LK, Vesely ED, McIntyre JC, Zhang L, Martens JR, Lawlor ER: Polycomb-Dependent Repression of the Potassium Channel-Encoding Gene *KCNA5* Promotes Cancer Cell Survival Under Conditions of Stress. *Oncogene* 34(35) 4591-4600, 2015.

Service: Dr. Lawlor is the associate director for the University of Michigan Comprehensive Cancer Center (UMCCC), in addition to her other leadership roles. As a senior leader in the UMCCC, she is one of nine members of the senior leadership council and plays an active role in setting the strategic direction and research priorities for the center as a whole. She also played a key role in competitive renewal application to the National Cancer Institute (NCI) and led to a successful renewal with an outstanding to exceptional rating, retaining its NCI designation as a comprehensive cancer center. Nationally, Dr. Lawlor is also on the steering committee for the Pediatric Cancer Working Group and the Education Committee of the American Association for Cancer Research. She serves regularly as an ad-hoc reviewer for numerous grant and award review panels nationally and internationally, including the National Cancer Institute (NCI), Cancer Prevention Research Institute of Texas (CPRIT), American Association for Cancer Research, and panels in both Canada and the United Kingdom.

External Reviewers:

Reviewer A: "Dr. Lawlor's work is highly regarded. She is well funded with a current R01 and R21 as well as other grants. She has been invited to speak at numerous national and international meetings

and she has published her work in highly regarded scientific journals...Dr. Lawlor is a productive, well-funded investigator who has focused her research studies on understanding the biology of Ewing's sarcoma. Her CV indicates that she is active on a number of institutional committees and has trained a number of students who received their graduate degrees and have gone on to have successful careers in industry or academia."

Reviewer B: "This is an easy letter to write because Dr. Lawlor is an outstanding cancer biologist and pediatric oncologist and is well-deserving of this appointment... Beth is in the upper echelon nationally in the field of pediatric cancer biology, with particular expertise in the oncogenic drivers of Ewing's Sarcoma, a devastating bone tumor primarily seen in children. She has steadily published solid work in competitive peer-reviewed journals and has established herself as a recognized leader in the field. She has also been successful in maintaining external peer-reviewed funding to support her research efforts."

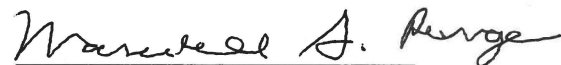
Reviewer C: "Dr. Lawlor is a highly productive, nationally recognized thought leader who has garnered national recognition and respect for her impressive and consistent track record focused on the delineating the complex biology that drives Ewing sarcoma. This level of research productivity combined with a spectacular record of mentoring at the University of Michigan should clearly qualify her for promotion to the Rank of Professor with tenure."

Reviewer D: "Beth has been continuously funded, has contributed substantively and from reviewing her CV, it is clear that she is an outstanding educator. She is a well respected international thought leader, and she was on my short list when I was asked to organize an international conference of such experts across pediatric oncology..."

Reviewer E: "Elizabeth compares favorably to a peer group consisting of other clinician scientists trying to make headway on Ewing Sarcoma, which has and remains a challenging disease both biologically and clinically, in pediatrics... She is bright, asks compelling questions, and is a rapid adopter of new technology. She has been a solid citizen to the UM community, having participated actively in teaching and service. Clearly the appointment of Elizabeth Lawlor to the UM faculty represents a strong asset to the campus, as she brings strong capabilities to an intellectual area in real need of advancement. I strongly endorse her promotion to Professor of Pediatrics."

Summary of Recommendations

Dr. Lawlor has proven herself to be a successful research scholar, a dedicated mentor and administrator who is recognized nationally and internationally for her expertise in sarcoma and cancer biology. She is a leader in her field. For these reasons, I am pleased to recommend Elizabeth Lawlor, M.D., Ph.D. for promotion to professor of pediatrics, with tenure, Department of Pediatrics, and professor of pathology, without tenure, Department of Pathology, Medical School.



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

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