Approved by the Regents
May 17, 2018

PROMOTION RECOMMENDATION
THE UNIVERSITY OF MICHIGAN
MEDICAL SCHOOL
DEPARTMENT OF MOLECULAR AND INTEGRATIVE PHYSIOLOGY
MEDICAL SCHOOL AND COLLEGE OF ENGINEERING
DEPARTMENT OF BIOMEDICAL ENGINEERING

Lisa M. Larkin, Ph.D., associate professor of molecular and integrative physiology, with tenure, Department of Molecular and Integrative Physiology, Medical School, and associate professor of biomedical engineering, without tenure, Department of Biomedical Engineering, Medical School and College of Engineering, is recommended for promotion to professor of molecular and integrative physiology, with tenure, Department of Molecular and Integrative Physiology, Medical School, and professor of biomedical engineering, without tenure, Department of Biomedical Engineering, Medical School and College of Engineering.

Academic Degrees:

Ph.D.	1992	University of California, Davis
M.S.	1989	University of California, Davis
B.S.	1985	University of California, Davis

Professional Record:

2010-present	Associate Professor of Molecular and Integrative Physiology, University of Michigan
2010-present	Associate Professor of Biomedical Engineering, University of Michigan
2010-present	Research Associate Professor, Institute of Gerontology, University of Michigan
2008-2010	Research Associate Professor, Department of Molecular and Integrative Physiology, University of Michigan
2008-2010	Research Associate Professor, Department of Biomedical Engineering, University of Michigan
2006-2008	Research Assistant Professor, Department of Molecular and Integrative Physiology, University of Michigan
2006-2008	Research Assistant Professor, Institute of Gerontology, University of Michigan
2003-2008	Assistant Research Scientist, Department of Biomedical Engineering, University of Michigan
2002-2004	Assistant Research Scientist, Institute of Gerontology, University of Michigan
1996-2002	Assistant Research Scientist, Department of Internal Medicine, University of Michigan

Summary of Evaluation:

Teaching: Teaching is a particular strength for Dr. Larkin and her record is impressive. She has been involved in teaching at the School of Dentistry and Medical School for both undergraduate and graduate students. In addition to numerous didactic classes, she has been a strong mentor for trainees in the lab. The breadth of her teaching covers high school to graduate and post-graduate students. Dr. Larkin has mentored 14 high school students, 52 undergraduate research students; 21 master's students, 14 Ph.D. program students, five M.D. and four post-doctoral researchers.

Research: Dr. Larkin's research focuses on regenerative medicine, specifically in the field of musculoskeletal tissue engineering. Her research on the development of engineered tissue will have significant impact in restoring the function of complex tissues following traumatic injury, and can also be used as a model for studying developmental muscle biology and muscle pharmacology. Dr. Larkin has been highly productive since her last promotion. Her current funding includes several NIH grants as well as one from the Department of the Army. Dr. Larkin has an excellent list of publications that includes 56 peer-reviewed publications, with eight of these from the past two years. Of particular note, her work in tissue engineering is highly translational and has resulted in four patents with an additional three intellectual property applications on record. Dr. Larkin maintains membership in six professional societies, including the Biomedical Engineering Society. As an authority in the field of tissue engineering, Dr. Larkin has become a popular speaker at meetings, both nationally and internationally.

Recent and Significant Publications:

VanDusen KW, Syverud BC, Williams ML, Jonah Lee JD, Larkin LM: Engineered skeletal muscle units for repair of volumetric muscle loss in the tibialis anterior muscle of a rat. *Tissue Engineering* Part A 20:2920-2930, 2014.

Mahalingam V, Smietana MJ, Olsen TJ, Wojtys EM, Wellik DM, Arruda EM, Larkin LM: Allogenic vs. autologous derived cell sources for use in engineered bone-ligament-bone for sheep ACL repair. *Tissue Engineering* Part A 21:1047-1054, 2015.

Mahalingam V, Smietana MJ, Olsen TJ, Wojtys EM, Wellik DM, Arruda EM, Larkin LM: Fresh vs frozen allogenic derived cell sources for use in engineered bone-ligament-bone for sheep ACL repair. *Tissue Engineering* Part C. Methods 21:548-556, 2015.

Florida SE, VanDusen KW, Mahalingam VD, Schlientz AJ, Wojtys EM, Wellik DM, Larkin LM: In Vivo structural and cellular remodeling of engineered bone-ligament-bone constructs used for anterior cruciate ligament reconstruction in sheep. *Connect Tissue Res* 57:526-538, 2016.

Novakova SS, Mahalingam VD, Florida SE, Mendias CL, Allen A, Arruda EM, Bedi, A, Larkin LM: Tissue engineered tendon constructs for rotator cuff repair in sheep. *Journal of Orthopaedic Research* 2017 Jun; DOI: 10.1002/jor.23642.

Service: Dr. Larkin currently serves as ad hoc reviewer for seven journals and is on the editorial board of three journals (*American Journal of Tissue Engineering*, *Frontiers in Physiology*, *Journal of Regenerative Medicine*). She has extensive experience as an ad hoc reviewer for numerous organizations and study sections, including the NIH NIAMS Institute, NIH NRSA fellowship and the Medical Research Council, United Kingdom. Dr. Larkin also serves on the organization, steering and executive committees for several university and departmental programs.

External Reviewers:

Reviewer A: "Dr. Larkin is a leader in musculoskeletal tissue regeneration, dedicated educator and mentor working actively in a highly significant and challenging research area. She has demonstrated in abundance her ability to build an independent and productive research program, given both the high number of publications and extended funding track record. Most importantly, Dr. Larkin's work stands out because of its inherent creativity as well as current and future impact in regenerative medicine. She is certainly a recognized leader in cell-based approaches to skeletal tissue regeneration, and I eagerly anticipate the exciting future discoveries to be generated through her innovative and productive research program."

Reviewer B: "I have an extremely high regard of both the quality and direction of Dr. Larkin's research studies. She has maintained a strong focus, which covers both tendon/ligament and muscle regenerative studies in the field of musculoskeletal tissue engineering. She has also carried out important studies throughout her whole career relating to free radical biology and neuromuscular dysfunction during skeletal muscle ageing. In both areas, Dr. Larkin has built a reputation as a leading scientist in her discipline, and has developed an impressive research portfolio, based [o]n significant grant support."

Reviewer C: "In addition to her stellar contributions to the fields of tissue engineering and regenerative therapy, Dr. Larkin is a clear and enthusiastic communicator of science – a trait that is as rare as it is important. Her talent and passion for scientific communication, collaboration, and camaraderie is evident from her publication record, and teaching, lecturing, and mentoring activities."

Reviewer D: "…Dr. Larkin is a leader in musculoskeletal tissue regeneration, dedicated educator and mentor working actively in a highly significant and challenging research area. She has demonstrated in abundance her ability to build an independent and productive research program, given both the high number of publications and extended funding track record. Most importantly, Dr. Larkin's work stands out because of its inherent creativity as well as current and future impact in regenerative medicine. She is certainly a recognized leader in cell-based approaches to skeletal tissue regeneration, and I eagerly anticipate the exciting future discoveries to be generated through her innovative and productive research program."

Reviewer E: "There is a steady progression in her work from basic, to more translational, making her one of the few working in musculoskeletal tissue engineering whose work spans this broad range."

Summary of Recommendation:

Dr. Larkin is a highly valuable, collaborative and productive member of the faculty in the Medical School and College of Engineering. Her record of research accomplishments serves as an example for others to follow and her outstanding contributions to teaching and service to the university and community at large are invaluable. Therefore, we are pleased to recommend Lisa M. Larkin, Ph.D. for promotion to professor of molecular and integrative physiology, with tenure, Department of Molecular and Integrative Physiology, Medical School, and professor of biomedical engineering, without tenure, Department of Biomedical Engineering, Medical School and College of Engineering.

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

Alec D. Gallimore, Ph.D.
Robert J. Vlasic Dean of Engineering
College of Engineering

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