

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

Susan Brooks Herzog, 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, 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, College of Engineering.

Academic Degrees:

Ph.D.	1992	University of Michigan
M.S.E.	1987	University of Michigan
M.S.	1987	University of Michigan
B.S.E.	1985	University of Michigan

Professional Record:

2010-present	Associate Professor of Molecular and Integrative Physiology, with tenure, University of Michigan
2010-present	Associate Professor of Biomedical Engineering, University of Michigan
2003-2010	Associate Professor of Molecular and Integrative Physiology, University of Michigan
2003-2006	Research Associate Professor, Institute of Gerontology, University of Michigan
1997-2010	Assistant Professor of Biomedical Engineering, University of Michigan
1995-2003	Assistant Professor of Molecular and Integrative Physiology, University of Michigan
1995-2003	Assistant Research Scientist, Institute of Gerontology, University of Michigan
1994-1995	Lecturer, Department of Physiology, University of Michigan

Summary of Evaluation:

Teaching: Dr. Brooks Herzog has made outstanding contributions to teaching in both the Department of Molecular and Integrative Physiology and the Department of Biomedical Engineering. Currently, for Molecular and Integrative Physiology, Dr. Brooks Herzog directs and teaches in *Physiol 510*, Principles of Systems and Integrative Physiology, a full-semester foundation course for the graduate program. She has directed the course since 2007 and both the course as a whole and her lectures receive excellent ratings by the students. In addition, she has

taught a block of lectures in *Phys 201* since 2005. For Biomedical Engineering, she has taught a block of lectures in *Phys 419/519* since 1994 and has served as course director in multiple years and on the Graduate Committee for Bioengineering since 2007. Dr. Brooks Herzog has also been an active research mentor for undergraduates and has trained a total of five Ph.D. students, from both Physiology and Biomedical Engineering. Her excellence in teaching has been recognized by receipt of the 2012 EBS Teaching Award in Physiology.

Research: Dr. Brooks Herzog is currently well funded. She is the principal investigator on an NIH R01 and program director and project leader for an NIH P01(both to be renewed in 2013); and research and development core director for the NIH P30 Aging Nathan Shock Center (Miller PI), which runs through June of 2015. This is an excellent level of funding, including research support for her laboratory, as well as larger collaborative and center grant support that has had a very positive influence on the community of researchers in the field of aging within and outside the University of Michigan. Dr. Brooks Herzog's area of research is the effect of aging and exercise on contraction of skeletal muscle. Dr. Brooks Herzog has published a total of 46 peer reviewed publications, with five additional papers under review. These are mainly published in excellent specialty physiology and gerontology journals. She has written 12 reviews and 13 book chapters. She has published 21 papers since becoming an associate professor, with 14 as senior author. Within the past two years she has published 10 papers. Thus her current productivity and impact as a scholar are considered to be excellent. Dr. Brooks Herzog also has had multiple international invitations to give research presentations, with, on average, one extramural seminar presentation per year.

Recent and Significant Publications:

Claflin DR and Brooks SV: Direct observation of failing fibers in muscles of dystrophic mice provides mechanistic insight into muscular dystrophy. *American Journal of Physiology: Cell Physiology* 294:C651-C658, 2008.

Brooks SV, Vasilaki A, Larkin LM, McArdle A, Jackson MJ: Repeated bouts of aerobic exercise lead to adaptations in free radical generation and NFκB activation by skeletal muscles of mice. *Journal of Physiology* 596:3979-3990, 2008.

Larkin LM, Davis CS, Robinson C, Kostrominova T, VanRemmen H, Richardson A, Feldman EL, Brooks SV: Skeletal muscle weakness due to deficiency of Cu,Zn superoxide dismutase is associated with loss of functional innervation. *American Journal of Physiology: Regulatory, Integrative, Comparative Physiology* 301:R1400-R1407, 2011.

Wood LK, Arruda EM, Brooks SV: Regional stiffening with aging in tibialis anterior tendons of mice occurs independent of changes in collagen fibril morphology. *Journal of Applied Physiology* 111:999-1006, 2011.

Mendias CL, Gumucio JP, Bakhurin KI, Lynch EB, and Brooks SV: Physiological loading of tendons induces scleraxis expression in epitenon fibroblasts. *Journal of Orthopaedic Research* doi: 10.1002/jor.21550. [Epub ahead of print].

Service: Dr. Brooks Herzog currently serves as associate editor for two journals: *Frontiers in Skeletal Muscle Physiology* and *Journal of Gerontology*. She also has been invited to review grants for the NIH and the NSF, serving as a frequent *ad hoc* member. She has also been asked to review for a number of other foreign (Wellcome Trust, Research into Ageing, Natural Sciences and Engineering Research Council of Canada, etc.) and national (Muscular Dystrophy Association) review panels. In addition, she has served as a member of the National Scientific Advisory Council for the American Federation of Aging Research since 2000. This is a substantial level of editorial and review activity demonstrating that Dr. Brooks is contributing to the fields of musculoskeletal biology and aging research. These service activities provide strong evidence that Dr. Brooks is both nationally and internationally considered to be an expert in these fields.

External Reviewers:

Reviewer A: “Her work has made a significant contribution to the field of muscle biology in two major areas: the understanding of how aging affects skeletal muscle mass and contractile function and the understanding of eccentric muscle injury and its role in muscle diseases and aging....Susan Brooks is a highly respected scientist in the field of muscle biology. Her work is of exceptional quality and she established outstanding collaborations. There are very few senior women in the field of muscle biology and Susan stands out as an exceptional role model.”

Reviewer B: “Dr. Brooks-Herzog’s research accomplishments on the effects of aging and dystrophy on skeletal muscle structure and function have always been creative and her publications are in highly reviewed journals.”

Reviewer C: “The attached published papers are all of high scientific quality and SBH is the first or senior author on all these papers. These papers represent a continuation of her previous research work and also document her independence as a senior scientist.”

Reviewer D: “Without question, Dr. Brooks has established herself as an international leader in skeletal muscle research. Consistently, her work appears in the finest scholarly journals and she has addressed important questions related to skeletal muscle structure/function during disease, aging, and during recover from injury....In addition to an outstanding publication record, Dr. Brooks’ success in obtaining extramural funding is outstanding.”

Reviewer E: “Dr. Brooks is widely recognized for her scientific expertise. She has been invited to lecture at universities and scientific conferences in Europe, Great Britain, and across North America. She has served on numerous NIH study sections and has reviewed grants for a long list of funding agencies....It is clear that Dr. Brooks is a committed educator. She has been a continual presence in the classroom since 1994, teaching a variety of physiology and bioengineering courses at the graduate and undergraduate levels. She has also provided basic science training for residents in orthopedic surgery. Beyond the classroom, Dr. Brooks invests substantial effort in research training at the bench.”

Reviewer F: “Since 2005, Dr. Brooks-Herzog has also been the Director of the Research and Development Core at the Nathan Shock Center for Basic Biology of Aging. This is an outstanding facility at the University of Michigan, and Dr. Brooks-Herzog has taken a leading role in establishing the national and international prominence of aging research at the University of Michigan....She has truly had several landmark publications that I believe will have a major impact in basic muscle physiology as well as clinical translation. In particular, her research examining the mechanical events associate with contraction-induced injury has led the field.”

Summary of Recommendation:

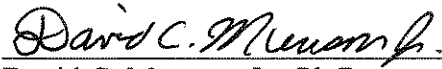
Dr. Brooks Herzog has established herself as a national and international expert of high standing in the field of musculoskeletal and aging research. She has made important contributions to the teaching mission of both the Medical School and the College of Engineering and is deemed by her colleagues to be a treasured faculty member. We are pleased, therefore, to recommend Susan Brooks Herzog, 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, College of Engineering.



James O. Woolliscroft, M.D.

Dean

Lyle C. Roll Professor of Medicine



David C. Munson, Jr., Ph.D.

Robert J. Vlasic Dean of Engineering

College of Engineering

May 2013