

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

Michael M.A. Sutton, Ph.D., assistant professor of molecular and integrative physiology, Department of Molecular and Integrative Physiology, Medical School, is recommended for promotion to associate professor of molecular and integrative physiology, with tenure, Department of Molecular and Integrative Physiology, Medical School [also being promoted to research associate professor, Molecular and Behavioral Neuroscience Institute].

Academic Degrees:

2002	Ph.D.	Yale University
1995	B.S.	Queen's University, Ontario, Canada

Professional Record:

2006-present	Assistant Professor of Molecular and Integrative Physiology, University of Michigan
2006-present	Research Assistant Professor, Molecular and Behavioral Neuroscience Institute, University of Michigan

Summary of Evaluation:

Teaching: Dr. Sutton has contributed substantially to the educational mission of the University. Since 2007, he has served as course director and instructor in Neuroscience 611/601, "Excitable Membranes," one of the core courses of the neuroscience graduate program curriculum. From 2008-2009, he was also one of three instructors for Neuroscience 623, the "Introduction to Research in Cellular and Molecular Neurobiology" laboratory course that is taught each year for incoming neuroscience graduate students. He has lectured in Physiology 502 ("Human Physiology" – an introductory graduate level class for non-physiology graduate students and advanced undergraduates with an enrollment of approximately 140) since 2010 and in 2012 he was an instructor in Physiology 592, "Integrative Neuroscience." From 2009-2010, Dr. Sutton also lectured in PIBS 503, "Research Responsibility and Ethics." In addition to didactic teaching, Dr. Sutton has participated in eight preliminary examination committees and is a member of 16 Ph.D. thesis committees. In the laboratory, Dr. Sutton has mentored three post-doctoral fellows and five graduate students, and has also been very active in the training of 20 undergraduate students who have undertaken research projects in his laboratory since 2007. Of note, four of Dr. Sutton's graduate students have also been successful in obtaining pre-doctoral (F31) NRSA awards under his mentorship. As reflected by his outstanding teaching evaluations, Dr. Sutton is a committed and highly effective educator.

Research: Since arriving at the University of Michigan in 2006, Dr. Sutton has demonstrated that he is a rising leader in the field of molecular and cellular neurobiology having built a

national and international reputation on his laboratory's work related to local translation in neuronal dendrites and homeostatic control of synapse function. The current major interests in his research program are molecular mechanisms controlling the development and plasticity of synapses in the hippocampus, cellular and molecular mechanisms of memory formation, and pathogenic mechanisms contributing to intellectual disability, autism, and epilepsy. He is a recognized leader in the study of local translation in neurons, having demonstrated that such regulation contributes to homeostatic control of synaptic function via multiple mechanisms, including through retrograde signaling from the postsynaptic compartment to the presynaptic terminal. Dr. Sutton has key roles on five active grants (two as principal investigator), in addition to serving as mentor for four active F31 NRSA fellowships from the NIH. Dr. Sutton is currently the PI on a grant from the prestigious Pew Charitable Trust, and is PI of an NIH R01 grant, "Local homeostatic control of synapse formation." Owing to his strong collaborative partnerships, he is also a co-investigator on two other R01 grants, as well as a large grant from the Veterans Health Administration on which he is the co-investigator. His growing scholarly stature is supported by ten peer-reviewed manuscripts of which he is first or senior author on five since his appointment at the University of Michigan (Dr. Sutton lists 34 peer-reviewed publications in total). His publications are in high impact journals including *Neuron*, *Science*, *Cell*, *Nature*, and *Journal of Neuroscience*. Dr. Sutton has reviewed manuscripts for many high impact journals, and has served as a member of the editorial board of *Frontiers in Neural Circuits*. He has served as an ad hoc reviewer of grant applications for the US-Israel Binational Science foundation, and has been an ad hoc member for the NSD-B and SYN study sections at the NIH. Exemplifying Dr. Sutton's strong national and international recognition, he has given numerous seminars at other academic institutions, and has received regular invitations to speak at national and international meetings, including the Winter Conference on Brain Research, the Annual meeting of the Society for Neuroscience, Cold Spring Harbor meetings, Gordon Research Conferences, and HHMI/Janelia Farm conferences.

Recent and Significant Publications:

Jakawich SK, Nasser HB, Strong MJ, McCartney AJ, Perez AS, Rakesh NR, Carruthers CJL, Sutton MA: Local presynaptic activity gates retrograde homeostatic changes in presynaptic function driven by dendritic BDNF synthesis. *Neuron* 68:1143-1158, 2010.

Terauchi A, Johnson-Venkatesh EM, Toth AB, Javed D, Sutton MA, Umemori H: Distinct FGFs promote differentiation of excitatory and inhibitory synapses *Nature* 465:783-787, 2010.

Jakawich SK, Nealy R, Djakovic S, Patrick GN, Sutton MA: An essential postsynaptic role for the ubiquitin proteasome system in slow homeostatic plasticity in cultured hippocampal neurons. *Neuroscience* 171:1016-1031, 2010.

Zhang Y, McCartney AJ, Zolov SN, Ferguson CJ, Meisler M, Sutton MA*, Weisman LS*: Modulation of synaptic function by VAC14, a protein that regulates the phosphoinositides PI(3,5)P2 and PI(5)P. *EMBO Journal* in press. (*co-corresponding authors).

Henry FE, McCartney AJ, Neely R, Perez AS, Carruthers CJL, Stuenkel EL, Inoki K, Sutton MA: Retrograde changes in presynaptic function driven by dendritic mTORC1. *Journal of Neuroscience* in press.

Service: Dr. Sutton currently serves on the Bernard W. Agranoff Lectureship Committee and is a member of the MBNI Appointments and Promotions Committee. Since 2007, he has been a faculty member of the Undergraduate Research Opportunities Program and from 2009 until 2011 he served as a member of the Neuroscience Graduate Program Executive Committee. Over this time, Dr. Sutton also represented the University of Michigan as UM councilor for the Michigan Society for Neuroscience. In 2010, his contributions to the Neuroscience Program were recognized through an Outstanding Faculty Service Award. Since 2010, Dr. Sutton has been a member of the Advisory Committee on Primary Research Appointments, Promotions and Titles (APRAPT), and is the current chair of this committee. He has reviewed grant applications for OVPR (2009) and for the Biomedical Research Council Bridging Support Program (2011), and has served on the Rackham Distinguished Dissertation Committee (2010). In addition to his strong institutional service, Dr. Sutton has served as a peer reviewer for numerous high impact journals, for the US-Israel Binational Science Foundation, and for NSD-B and SYN study sections at the NIH. Dr. Sutton has also been generous with his time in professional development outreach efforts, both with the UM Neuroscience Graduate Program, as well as the national Society for Neuroscience.

External Reviewers:

Reviewer A: "...Dr. Sutton has demonstrated a strong and highly productive track record during the past six years as assistant professor, and has met and/or exceeded the requirements for promotion to associate professor with tenure. The level of research scholarship, creativity and innovation is very high, and I expect that Dr. Sutton will continue to make seminal contributions advancing neuroscience in the years ahead."

Reviewer B: "After joining the faculty at MBNI in 2006, Michael continues his quest in understanding mechanisms underlying modification of synaptic function. In the last five years, he has successfully established a research program that is both creative and productive. One of his seminal findings is that brain-derived neurotrophic factor (BDNF), whose synthesis and secretion is graded by synaptic activity, acts as a retrograde messenger in a homeostatic fashion to enhance presynaptic function....The success of Dr. Sutton's research program is reflected by publications in high impact journals, as well as the fact that he is well-funded....I would place Michael at the top of his peers in the field of synaptic plasticity."

Reviewer C: "...Dr. Sutton is a unique scientist with significant accomplishments. He is a rising leader in the field of molecular and cellular neurobiology....Dr. Sutton possesses all the characteristics that are needed in a scientist to elucidate the inherent complexity of synaptic communication and plasticity in the nervous system. Dr. Sutton's achievements as well as his potential and future promise as a biomedical scientist are in line with the mission of the University of Michigan. Given his seminal contributions and continuing creative productivity, I believe he would be considered a valued addition to any academic and research institution in the United States or elsewhere..."

Reviewer D: “The influence of his papers can be seen by the impressive number of meetings Dr. Sutton has been invited to as a principal investigator, including two Gordon conferences, a very prestigious Janellia farm meeting at the HHMI headquarters, the international meeting for the Society of Neurochemistry and the Winter Brain conference. Dr. Sutton has also been invited to speak at a number of Universities as well.”

Reviewer E: “In my opinion, he is one of the leading researchers in the world on homeostatic mechanisms precisely because of his sensitivity to complex issues of subcellular space (post back to presynaptic) and to time...his ‘brand recognition’ extends nationally and internationally, as seen in the very impressive list of seminars that he has given over the last six years, at excellent venues and institutions.”

Reviewer F: “I believe that in view of the exciting, high-profile work that Dr. Sutton is performing, the quality, innovation and significance of his findings to date, his overall creativity and insight as a scientist, his demonstrated ability to build a strong research group and his strong track record of service to the university and teaching, that he is highly meritorious of this promotion.”

Summary of Recommendation:

Dr. Sutton is a highly energetic and talented scientist whose research program has already gained national and international recognition. He has received an exceptional level of national and international recognition for his research activities and has contributed significantly to the intellectual atmosphere within the Institute, Department, and the University through his research, teaching and service responsibilities. We anticipate that he will continue to excel and grow his academic career at the University of Michigan and to serve as a superb role model for other scientists. For these reasons, I am pleased to recommend Michael M.A. Sutton, Ph.D. for promotion to associate professor of molecular and integrative physiology, with tenure, Department of Molecular and Integrative Physiology, Medical School.



James O. Woolliscroft, M.D.

Dean

Lyle C. Roll Professor of Medicine

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