Approved by the Regents
May 15, 2008

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

Anatoli N. Lopatin, Ph.D., Assistant Professor 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.

Academic Degrees:

Ph.D.	1990	Research Center of Molecular Diagnostics Moscow, Russia
M.S.	1980	Moscow Institute of Physics and Technology

Professional Record:

2000-Present	Assistant Professor of Molecular and Integrative Physiology, University of Michigan

Summary of Evaluation:

Teaching: Dr. Lopatin has developed into an excellent teacher of graduate and professional students. For the last four years, he has presented the Cardiovascular Physiology material in the Dental IMS II Curriculum. Student ratings for the last three years were 4.1-5.0 on a scale of 5. He also leads a one-hour conference on cardiovascular physiology as part of the M1 block in that area. In the graduate student area, he teaches in Nerve, Muscle, Synapse (Physiology 577-578), a required cell physiology course for Physiology graduate students. Since 2004, he has presented each year, five hours of lecture on ion channels and action potentials and assisted with student problem solving. His other teaching includes organizing and presenting in a readings course (Neuroscience 703/705) which students can take while participating in an "Ion Channel Journal Club." He also participates regularly in evaluating graduate student instructors in Physiology 201. In the laboratory, he has mentored and supervised one graduate student carrying out thesis research and two postdoctoral fellows. He has also provided instruction to four other graduate students from a variety of programs, including Applied Physics and Macromolecular Science and Engineering. He has also provided technology instruction primarily on the isolated perfused heart to six research fellows and junior faculty. He has served on six other thesis committees and five Preliminary Exam committees.

Research: Dr. Lopatin's research focuses on the biophysics of potassium channels particularly the class known as inward rectifiers, and their role in basic cardiac electrophysiology. This research utilizes a number of biophysical technologies and he has proved himself to be very innovative in their use. He has developed several new techniques such as one to physically localize ion channels. In his earlier work he explained the mechanism of inward rectification in potassium channels as being due to intracellular polyamines plugging the channel pore. His later work has shown how Kir2 channels underlie cardiac potassium current and how IK1 channels

shorten the cardiac action potential during hypoxia. This research has resulted in 37 peer-reviewed original research papers and six book chapters published in high quality journals for his field including *Circulation Research*, *Journal of Physiology,* and *Journal of Molecular and Cellular Cardiology*. He has also edited one book. He has been invited to present his research at a Gordon Conference and in total has made four invited external presentations since 2005. His work is supported by a NIH R01 grant originally funded in 2001 and refunded in 2007. He also serves as a co-investigator on two NIH grants to other individuals and has submitted a R21 grant which is now in revision. Because of his research expertise he also serves as a grant reviewer for the National Science Foundation, the Wellcome Trust, and the Veterans Affairs (VA) and recently has become a NIH reviewer on the Electrical Signaling, Ion Transport and Arrhythmias Study Section.

Recent and Significant Publications:

Piao L, Li J, McLerie M and Lopatin AN: Transgenic upregulation of I_{K1} in the mouse heart is proarrhythmic. *Basic Research in Cardiology* 102(5):416-428, 2007.

Piao L, Li J, McLerie M and Lopatin AN: Cardiac I_{K1} channels underlie early action potential shortening during hypoxia in the mouse heart. *Journal of Molecular and Cellular Cardiology* 43(1): 27-38, 2007.

Panama BK and Lopatin AN: Differential polyamine sensitivity in Kir2 channels. *Journal of Physiology* 571(2): 287-302, 2006.

Li J, McLerie M and Lopatin AN: Transgenic up-regulation of I_{K1} in the mouse heart leads to multiple abnormalities of cardiac excitability. *American Journal of Physiology. Heart and Circulation Physiology* 287(6): H2790-H2802, 2004.

McLerie M and Lopatin AN: Dominant negative suppression of I_{K1} in the mouse heart leads to altered cardiac excitability. *Journal of Molecular and Cellular Cardiology* 35(4): 367-378, 2003.

Service: In the Department of Molecular and Integrative Physiology, Dr. Lopatin served three years on the Graduate Committee, three years as an elected member of the Space Committee, and one year as departmental seminar coordinator. In the Medical School, he serves on the Operating Committee of the Center for Integrative Genomics. He participates in the Neuroscience Program, the Cardiovascular Center and the Organogenesis Center.

External Review:

Reviewer A: "I have had the opportunity to hear Dr. Lopatin present his work at scientific meetings and found his seminars to be highly polished, enlightening, well-received and advanced the field without being over-reaching."

Reviewer B: "...Dr. Lopatin has established himself as a leading researcher in the field of inward rectifier K channels, where he has made and continues to make substantial contributions that are both important and clinically relevant to a major health problem."

Reviewer C: "Anatoli has been quite successful funding his work at the very difficult current funding climate....It is clear that innovation and technological excellence are very high in his agenda."

Reviewer D: "In summary, unquestionable talents, impressive scholarly achievements and professional skills place Dr. Lopatin among the leading and world-recognized experts in his field. I believe that the unique combination of advanced education, personal talents, devotion to the work with ion channels and basic cardiac electrophysiology and the perfect environment in the Department of Molecular and Integrative Physiology provide Dr. Lopatin with all the necessary components for his further successful research and professional growth. I believe that as an established and world-recognized scientist, Dr. Lopatin is fully qualified for the position of Associate Professor with tenure in any leading University in [the] USA."

Reviewer E: "Dr. Lopatin is widely regarded as a principal authority in his field...His works have been seminal in the understanding of a very important group of cardiac ion channels...Dr. Lopatin's work places him squarely among the leaders in his area."

Summary of Recommendation:

Dr. Anatoli Lopatin has developed a respected reputation as a major contributor to the field of ion channels and how they underlie cardiac electrophysiology. He is also a dedicated and effective teacher and a highly valued colleague across the University. I am pleased to recommend him for promotion to Associate Professor, with tenure, in the Department of Molecular and Integrative Physiology.

James O. Woolliscroft, M.D.
Dean
Lyle C. Roll Professor of Medicine

May 2008