

PROMOTION RECOMMENDATION  
THE UNIVERSITY OF MICHIGAN  
MEDICAL SCHOOL  
DEPARTMENT OF INTERNAL MEDICINE

Lennane M. Espinoza-Fonseca, Ph.D., assistant professor of internal medicine, Medical School, is recommended for promotion to associate professor of internal medicine, with tenure, Department of Internal Medicine, Medical School.

Academic Degrees:

Ph.D.	2009	National Polytechnic Institute, Mexico
B.S.	2007	Comenius University, Slovakia

Professional Record:

2018-present	Assistant Professor of Internal Medicine, University of Michigan
2014-2018	Assistant Professor, University of Minnesota

Summary of Evaluation:

Teaching: Since coming to the University of Michigan in 2018, Dr. Espinoza-Fonseca has become actively involved in the teaching and mentoring of our post-doctoral fellows, clinical fellows, and junior faculty, in addition to his extramural teaching activities. Continuing the mentoring approach that he developed while at University of Minnesota, Dr. Espinoza-Fonseca focuses on assisting trainees in developing the skills needed to be a successful researcher, including designing a cohesive research program, communicating effectively in presentations, and improving writing skills for the preparation of grants and publications. He provides one-on-one mentoring, as well as advice on networking for career development. In addition to laboratory mentoring, Dr. Espinoza-Fonseca lectures on the topic of pharmacological approaches to heart disease in the Basic Electrophysiology Seminar Series, which is attended by both clinical and basic science trainees. He is a member of the Michigan Biology of Aging Program, has lectured on translational cardiovascular medicine and participated in the annual symposium. He has also given invited presentations at the National Polytechnic Institute in Mexico, and a European Molecular Biology Organization (EMBO) Workshop in Bangalore, India, targeted to graduate students and postdoctoral fellows.

Research: Dr. Espinoza-Fonseca's research focuses on understanding in high resolution the molecular motion and interactions that are responsible for regulating calcium transport in muscle cells, with a goal of translating these findings into therapies to treat heart disease associated with alterations in calcium transport. Key accomplishments include clarifying the structural mechanisms for the regulation of calcium transport in the heart, providing novel insights into the functional divergence among homologous calcium transport regulators, determining the atomistic structures of novel calcium transport regulatory complexes in muscle cells, and elucidating functional roles of conserved domains in calcium transport regulators. In addition to his own work, he has developed a number of collaborative projects to move the translational aspects of his research forward. Dr. Espinoza-Fonseca is currently the principal investigator of two NIH R01 grants and a Michigan Drug Discovery Grant. He has authored 60 peer-reviewed publications.

His reputation in his field is evidenced by invited national and international talks, study section service, and his role on the editorial boards of *PLoS One* and *Nature Scientific Reports*.

#### Recent and Significant Publications:

Fernández-de Gortari E, Aguayo-Ortiz R, Autry JM, Espinoza-Fonseca LM: A hallmark of phospholamban functional divergence is located in the N-terminal phosphorylation domain. *Comput Struct Biotechnol J* 18: 705-713, 2020.

Glaves JP, Primeau JO, Gorski PA, Espinoza-Fonseca LM, Lemieux MJ, Young HS: Interaction of a Sarcolipin Pentamer and Monomer with the Sarcoplasmic Reticulum Calcium Pump, SERCA. *Biophys J* 118(2): 518-531, 2020.

Glaves JP, Primeau JO, Espinoza-Fonseca LM, Lemieux MJ, Young HS: The Phospholamban Pentamer Alters Function of the Sarcoplasmic Reticulum Calcium Pump SERCA. *Biophys J* 116(4): 633-647, 2019.

Espinoza-Fonseca LM: Probing the effects of nonannular lipid binding on the stability of the calcium pump SERCA. *Sci Rep* 9(1): 3349, 2019.

Fernández-de Gortari E, Espinoza-Fonseca LM: Structural basis for relief of phospholamban-mediated inhibition of the sarcoplasmic reticulum  $\text{Ca}^{2+}$ -ATPase at saturating  $\text{Ca}^{2+}$  conditions. *J Biol Chem* 293(32): 12405-12414, 2018.

Service: Dr. Espinoza-Fonseca is an active member of the Biophysical Society, the American Heart Association, and the American Society for Biochemistry and Molecular Biology. He has served as a grant reviewer for funding organizations in Mexico, the Czech Republic and Hungary, and is an ad hoc member of the NIH Cardiac Contractility, Hypertrophy, and Failure Study Section. He has also provided peer-review service for more than two dozen journals, including *Circulation Research*, *Proceedings of the National Academy of Sciences*, and *Science Signaling*. Institutionally, he provides service as a member of the Frontiers in Science Review Committee.

#### External Reviewers:

Reviewer A: “[Dr. Espinoza-Fonseca’s] work on the molecular basis of muscle activity has played a critical role for the field...His work is well known and well cited in the muscle field. What is striking about his CV is the extraordinary breadth of his research interests and expertise... Dr. Espinoza-Fonseca has an exceptional record of grant funding for his research...I support Dr. Espinoza-Fonseca’s promotion to Associate Professor with tenure. I believe his grant support (recognizing the respect he carries with his current peers) and publication record would gain him such a promotion at my own institution, and that his service and teaching are also sufficient. These add up to an exceptionally productive and well respected researcher and hold promise for continued future success.”

Reviewer B: “Dr. Espinoza-Fonseca has provided significant original research contributions to his field in the form of publications, and seminars, and will continue to develop his research program of the highest quality. He has shown sufficient scholarship through his review publications, manuscript reviews, and grant review panel membership. Finally, he has shown

continued productivity since his appointment in 2014 in the form of publications that are driving new insights into the field of ATPase structure and function, as they relate to health and disease...I very strongly believe that Dr. Espinoza-Fonseca certainly meets the criteria for the promotion to Associate Professor...I look forward to seeing his continued success in the field.”

Reviewer C: “...I have reviewed [Dr. Espinoza-Fonseca’s] accomplishments and find that he easily qualifies for promotion based on the definitions and criteria that were provided to me...In a little more than a decade since he obtained his Ph.D....Dr. Espinoza-Fonseca has established a well-funded, independent and thriving research program...His research consistently articulates creative hypotheses and provides detailed molecular pictures of complex and multiprotein interactions that are relevant to human health.”

Reviewer D: “Prof. Espinoza-Fonseca’s work focuses on applying computational approaches to understanding complex phenomena associated with myocyte calcium handling, and he has a strong record of productivity with 58 peer reviewed articles and many of these being published as an independent researcher and as corresponding author...Prof. Espinoza-Fonseca’s research efforts are capped by significant funding from National Institutes of Health (NIH). It is well-known that the NIH provides the most rigorous review of grant proposals, and their decision to fund his work represents a *sine qua non* endorsement.”

Reviewer E: “...I am very impressed with the output of thoughtful research pursued by [Dr. Espinoza-Fonseca’s] group...Dr. Espinoza-Fonseca distinguishes himself by being able to bridge advanced molecular simulation methodology with impactful applications to physiology and medicine...Most impressive is his recent thrust toward hit-to-lead optimization drug discovery... As this work advances, I expect Dr. Espinoza-Fonseca’s rising star in this field to climb even further.”

Summary of Recommendation:

Dr. Espinoza-Fonseca is well-known for his contributions to field of the regulation of calcium transport in muscle cells. He is also committed to our academic teaching and service missions. I am pleased to recommend Lennane M. Espinoza-Fonseca for promotion to associate professor of internal medicine, with tenure, Department of Internal Medicine, Medical School.



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

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