



Athinoula A. Martinos Center

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F O R B I O M E D I C A L I M A G I N G

David Sheinberg, PhD
 Search Committee Chair
 Department of Neuroscience
 Brown University
 Providence, RI
compneurosearch@brown.edu

Dear Dr. Sheinberg:

I am pleased to write this letter recommending Dr. Stephanie Jones for tenure-track Assistant Professor in Computational Neuroscience at Brown University.

Stephanie is an outstanding and gifted young research scientist. Having first come to the Martinos Center as a research fellow, with little experience in Neuroscience and none in the clinical domain, Stephanie rather swiftly and gracefully found her unique place as a critical member of our research community. Being in the exciting, yet no doubt challenging, position of being the only female member at the Martinos Center trained in Mathematics and in the development of models of circuit-level neural dynamics, she demonstrated great expertise in applying mathematics to the complex dynamics of the nervous system, and led seminal work to develop unique biophysically rich computational models of cortical circuitry to interpret macroscopic MEG dipole signals. Insights gained through the use of her modeling methods have led to novel interpretations of the MEG signal that would not otherwise be possible. The integration of these methodologies requires a level of theoretical savvy and in-depth neuroscience training that few researchers possess, and her research program represents an enticing future direction for interdisciplinary biomedical imaging.

Stephanie's methods for modeling of MEG signals have led to novel insights into the origin of sensory-evoked signals and spontaneous rhythms that have direct clinical implications. Of particular note, her modeling methods have led to detailed interpretation of how the cortical alpha and beta rhythms that are prominent in MEG/EEG signals arise in cortical circuits, which she eloquently describes as requiring rhythmic input from different thalamic nuclei. She has led experimental studies showing these rhythms are modulated with attention, in healthy aging, and by meditative practice, and her models predict neurophysiologically interpretable parameters that produce the observed changes. Importantly, these same rhythms are disrupted in conditions such as Parkinson's disease. Stephanie's current work in collaboration with Drs. Christopher Moore and Wael Assad to test the relevance of the predictions that may guide deep brain stimulation paradigms is one of the most exciting examples of how computational neural modeling can lead to directly testable predictions on clinically relevant neural dynamics.

Stephanie has also expanded the applicability of her modeling methods to study brain development with Drs. Ellen Grant and Yoshio Okada at Children's Hospital in Boston. CHB has recently installed MEG to study cortical changes in development. This collaboration, involving the use of Stephanie's modeling methods to interpret changes in MEG-measured signals in infants and children in healthy development as well as in diseases of



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development, demonstrates the applicability of her methods to study cortical dynamics in the clinical setting.

Among Stephanie's strengths is her ability to communicate theoretically rich concepts to neuroscientists and clinicians, and to bring together researchers across disciplines. A clear demonstration of her abilities in this domain, she led the formation of the Martinos Computational Neuroscience Group, which and bore several successful collaborative efforts. These efforts also spawned the MGH's involvement in the Boston Area "Cognitive Rhythms Collaborative", now an NSF-supported network of researchers from local institutions, including MGH, BU and MIT, that combines theoretical and experimental expertise to study brain rhythms. Stephanie has led MGH participation (as well as serving on the CRC Executive Committee) in this group, which is spearheaded by her former PhD advisor Dr. Nancy Kopell. Funding provided to this group has enabled the hiring of post-doctoral researchers at MGH, one who has recently been hired to integrate computational research with MEG imaging, and who will act as liaison to integrate data from across the CRC-participating institutions.

Stephanie has demonstrated her ability to independently secure and maintain funding for her research program in an extremely difficult fiscal climate, having successfully applied for competitive programs including an NIH K25 Mentored Career Training Award, MGH Claflin Distinguished Scholar Award, MGH Interim Support Award, Harvard Scholars in Medicine Fellowship Award, and currently, an NSF Collaborative Efforts in Computational Neuroscience Award. Stephanie has also generously participated in many successful grant applications led by her colleagues at the Martinos Center.

Although we miss her regular presence here at the MGH, I am very pleased about Stephanie's opportunities to further grow her research program at Brown. Stephanie will always be considered a member of our research community, and we fully anticipate that aspects of her MEG research will be continue to be carried out in collaboration with our researchers at MGH. Her transition to a faculty position at Brown promises to offer exciting opportunities to foster collaborations between MGH and members of the Brown Brain Sciences Institute.

I have every confidence that Dr. Jones will be an excellent addition to the Neuroscience faculty at Brown, and it is my pleasure to give her my strongest endorsement for a tenure-track Assistant Professor position. Please contact me if I can provide you any further information about this outstanding young scientist.

Sincerely,

A handwritten signature in dark ink, appearing to read 'B. Rosen', with a stylized, flowing script.

Bruce R. Rosen, MD, PhD Director, Athinoula A. Martinos Center for Biomedical Imaging
Department of Radiology, Massachusetts General Hospital
Professor of Radiology and Health Sciences and Technology
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