



## MASSACHUSETTS INSTITUTE OF TECHNOLOGY

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Biocomplexity Faculty Search Committee  
c/o Professor Rob de Ruyter van Steveninck  
Biocomplexity Institute  
Indiana University  
Swain Hall West 117  
Bloomington, IN 47405-7105

Dear Biocomplexity Faculty Search Committee,

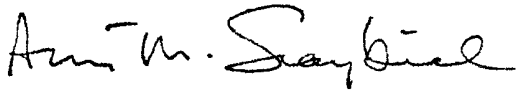
I am writing to recommend in the highest possible terms Dezhe Jin for a position in your Biocomplexity Institute. I met Dr. Jin as a result of interacting with his postdoctoral adviser, Professor Sebastian Seung, on work that we are doing on the brain's neural activity related to encoding sequential behaviors. Professor Seung indicated that Dezhe was outstandingly capable, even among the highly talented people in his group, and that Dezhe had become interested in examining the neural output of complex forebrain circuits. This introduction has led to an active collaboration between Dezhe Jin and my own laboratory, initiated about a year ago. Dezhe Jin is, simply put, spectacular.

When Dezhe Jin began to work with us he expressed great interest in basal ganglia circuits – the circuits that are dysfunctional in human disorders such as Parkinson's disease. The circuits are interesting because there is apparently a collaboration between the highest neural level of the brain – the neocortex – and the group of subcortical brain nuclei known as the basal ganglia. What Dezhe did was to collect all of the electrophysiological recording data from our simultaneous dual recordings in the basal ganglia (striatum) and neocortex and work on the files to begin to see whether patterns emerged in the recordings. The recordings were made from many electrodes implanted in the brains of awake behaving macaques trained to make sequences of eye movements (Fujii and Graybiel, *Science*, 2003). Dezhe Jin has shown extraordinary alacrity in manipulating the huge data files and putting them into formats that allow analysis. He has shown great ingenuity in analyzing the data and in trying to look for regularities – and discontinuities – in the spike data. With strong input from Dezhe, we have carried out a further set of electrophysiological recordings and we will, with Dezhe Jin, complete and relatively soon submit findings suggesting that state-level changes can be detected in the cerebral cortex and basal ganglia of primates as the animals engage in sequential tasks requiring different types and/or amounts of learning.

In addition to this work dealing with the actual biologic data themselves, Dezhe Jin has actively expanded his network modeling to include a major effort on modeling the striatum. This is of particular interest to him because of his success in modeling inhibitory networks. As a result of this work, I have interacted with Dezhe very extensively not only in analysis of raw data but also at a conceptual level. Here at MIT I have had experience in interacting with physicists and computational modelers on a number of occasions and put Dezhe Jin in the very top group of individuals with this expertise.

Dezhe Jin is a physicist who has shown a deep and evident commitment to working on problems related to complex biological systems including those mediating higher brain function. A major field is emerging combining the resources of physicists and biologists to advance the understanding of the brain. Dezhe Jin, in my opinion, will be a major contributor to this new enterprise and I suspect that he will make pioneering contributions. In addition to his clear intellectual talents, I should mention that Dezhe is one of the most personable individuals I have met among our postdoctoral fellows and graduate students. He is interactive, obviously enthusiastic about the work, and extraordinarily kind and generous in talking with students and postdocs. I have on several occasions asked Dezhe to introduce aspects of his work at our laboratory meetings and other informal meetings, and have learned that Dezhe Jin is an extremely talented teacher. I fully expect that he will be a truly special faculty colleague. I would welcome his appointment to our own faculty.

Very sincerely,

A handwritten signature in black ink that reads "Ann M. Graybiel". The signature is fluid and cursive, with the first letters of each name being capitalized and prominent.

Ann M. Graybiel  
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Investigator, McGovern Institute for Brain Research