

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

December 2, 2003

Dear Dr. van Steveninck:

**Dr. Jessica Newton** is applying for your Assistant Professor position in neuroscience, and I am writing in support of her application. Jessica was a Master's student, in Alex Skavenski's lab, and a member of our vision group when I first came to know her. After Alex's death, she moved into my lab. She is presently working as a postdoctoral fellow in Mriganka Sur's laboratory at MIT, in which position she successfully sought funding via an NRSA.

For her Master's thesis, Jessica did some very nice work on adult cross-modal plasticity in the rabbit. She demonstrated tactile responses in V1 after monocular enucleation, and provided good evidence that this plasticity results from intracortical rather than subcortical connections. I presume that Bob Sikes, who worked with her on this project both before and after Alex's death, will write more about their results, but I want to be sure you know that Jessica had to work largely on her own on this project. I think it speaks very well for her that, starting as a second-year graduate student, she was able to carry this technically demanding work through to completion with minimal supervision and help. The paper based upon this work was published in Experimental Brain Research last year.

I am a visual psychophysicist, working mostly on color vision, and when Jessica moved into my laboratory we immediately began working on some experiments on perceptual learning in color vision, an area that fit in nicely with Jessica's abiding interest in plasticity. However, those experiments did not work well, and Jessica made what I think was a very wise strategic decision to shift topics. She chose to work on color detection and discrimination in peripheral retina, a topic that permitted her to keep her psychophysical work closely tied to anatomy and physiology. The results of that study included several important findings: (1) Jessica did a better job of identifying color mechanisms in the periphery than anyone has ever done in the long history of studying color in the periphery; (2) two of those identified mechanisms, the so-called "red" and "green" mechanisms, were shown by Jessica to have the same relative cone weights they have in fovea. This is a vital piece of evidence in our quest to understand

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the physiology of color, since much of the anatomy and physiology changes with eccentricity -- but now we know that the relative cone weights to these two color mechanisms do not. (3) Jessica provided the first unambiguous evidence that the well-known loss of sensitivity to 'green' in the periphery is not due to a change in the cone mosaic of the retina, but is instead a postreceptoral, neural effect. The paper describing these findings will be out soon in *Visual Neuroscience*. It is clear that there are changes in retinal connectivity, and changes in color vision, as retinal eccentricity is increased. How these two changes are related to one another is very much a matter of ongoing debate, a debate that will inform the larger discussion of structure-function relationships in neuroscience. I am confident that our paper will contribute to this debate.

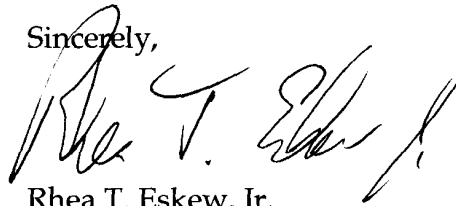
Since she left for MIT, I have followed Jessica's work with interest. She has continued her work on plasticity, this time in ferret and mouse, using several techniques (including imaging). These are fascinating, technically challenging studies, with the potential to have high impact on the field.

I know quite a bit about Jessica's skills as a teacher of undergraduates, and they are excellent. She worked with me as a teaching assistant, and then had her own class, in Statistics I. She is a good lecturer, and works hard to be sure the students understand the material; in addition, students like her and like her course. I believe she will make an excellent instructor.

Finally, let me note that Jessica is a great colleague. She is open and friendly, and was one of the leaders of the graduate student cohort while she was here.

I hope it is apparent that I think a lot of Jessica, and believe she has what it takes to succeed as an Assistant Professor: she is smart, knowledgeable, hard working, and very organized and focused. She has proven her ability to gain grant funding, run a laboratory independently, and teach undergraduates successfully. I give her my highest recommendation. If I can provide you with any further information, please do not hesitate to contact me.

Sincerely,



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Professor  
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