

November 30, 2004

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

Dear Prof. van Steveninck:

I write this letter of recommendation to give my very strongest support to Dr. Karen Zito who has applied for a position in your department. Simply said, Karen is terrific. I would rank Karen right amongst the very best graduate students I have seen at Berkeley and Stanford over my 25 year academic career as a faculty member. I hope you agree that she deserves to be at the very top of your list.

Karen was an undergraduate at Indiana University where she majored in biology (with honors) and mathematics, and also managed to find time to become quite an accomplished musician at the same time. She was 1st and 2nd author respectively on two papers from Norm Pace's lab from her undergraduate honors research. She graduated Phi Beta Kappa.

She came to Berkeley as a graduate student in 1992. From the outset, she was awarded an HHMI Predoctoral Fellowship, which gives you some indication of the strength of her GRE's and undergraduate GPA. From the time she joined our graduate program, it was clear that Karen was one of the brightest, most thoughtful, and most creative students in her class.

Now many years later, I can say that Karen was one of the brightest and most hard working graduate students I have ever known. I would rank her right amongst the top graduate students I have seen at Berkeley. She focused her thesis work on the molecular mechanisms that control the synaptic localization of both the Shaker potassium channel and the Fasciclin II cell adhesion molecule. She discovered the essential targeting sequences and the role of Dlg in this process. Karen published a beautiful paper in *Neuron* in 1997 on these studies. She made a series of chimeric molecules, with either normal or site directed mutated sequences, fusing portions of Shaker and Fas II to the neutral transmembrane protein CD8, and showed which sequences are required for localization. She also played a very intellectually active role in a review we published on Fas II in the Cold Spring Harbor Symposium book in 1997. In addition to being an outstanding molecular biologist, geneticist, and anatomist, Karen is also quite a good physiologist.

But Karen's most exciting contribution came towards the end of her thesis, which is why she stayed on in my lab as a postdoctoral fellow for 6-9 months or so after filing her thesis. Karen noticed that the CD8-Shaker chimeric protein, when transgenically driven by a muscle-specific promoter, was heavily localized to the postsynaptic side of the synapse. She then made a version that contained GFP as a CD8-GFP-Shaker transgene. One day she called me into the microscope room, knowing what she had under the microscope would blow my mind, and it did! Under the fluorescent microscope was a live,

crawling 3rd instar fly larvae, with all of its glutamate neuromuscular junctions lighting up like headlights. I could see the individual boutons of all of these synapses in the living organism. Karen knew the implications of this novel reagent. First off, she knew that she would be able to image living, growing synapses. Using this novel reagent, Karen learned how synapses grow and branch, and beautifully described the dynamic changes in this glutamate synapse. But second, she instantly appreciated the long-term potential of this reagent, and regretted that she would not be around to fully enjoy the fruits of her labor. With such a probe, we would be able to do a mutant screen for genes that control synaptic growth. Karen helped two postdoctoral fellows get set up with both the fly genetics, confocal imaging, and her transgenic constructs. Karen published a beautiful paper in *Neuron* in April of 1999 on the use of her probe to study the development of the synapse in a living organism. The images from her work are beautiful, but most important, the insights from it are profound.

As you can gather, I think Karen Zito is a real gem. She is extremely bright, clever, and hard working, and she gets along very well with everyone around her. Karen became interested in pursuing questions of synaptic plasticity in the mammalian brain, a natural extension of her graduate studies, and in learning 2-photon microscopy. Thus, she wisely joined the laboratory of Karel Svoboda at Cold Spring Harbor Laboratory, one of the world's experts in the application of 2-photon technology to synaptic plasticity. Karen won a prestigious Helen Hay Whitney Fellowship for her postdoctoral studies.

I won't go into detail here about what she has accomplished as a postdoctoral fellow at Cold Spring Harbor. I am sure she and Karel Svoboda will bring you up-to-date on those studies.

Karen is a wonderful person with a terrific mind, an interactive personality, and a hard working drive. I have absolutely no doubt that she will become a rising star and future leader in the field of synaptic plasticity. I recommend her for a position in your department with my highest enthusiasm.

Sincerely yours,



Corey S. Goodman
President and CEO, Renovis, Inc.
and Professor of Neurobiology, U.C. Berkeley