

# CORNELL UNIVERSITY

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

Re: Dr. **Felicia Pitici**

Dear Colleagues,

I am pleased to write on behalf of Dr. Pitici who has applied for a faculty position in your Department.

I have known Felicia since she arrived from Romania in 1992 to enroll in our PhD program. I was eager to accept her to my laboratory as her background was in theoretical physics and she had expressed a specific interest in molecular biophysics. In the first two years of her doctoral training she took basic courses in Biology and she rotated through various labs in biophysics and biomathematics, doing both theoretical and experimental work (e.g., in molecular spectroscopy of DNA systems). Having chosen my lab for her dissertation research, she decided to work on a set of structure-function problems related to EF-hand calcium binding proteins and especially calmodulin and troponinC. While her background in many aspects of physics was broad and very appropriate for the research she proposed, Felicia had to develop first the skills she lacked in computational biology and research on molecular systems in the context of biological processes. This took longer than anticipated, as she lacked experience with state of the art hardware and with large computational packages. She could write code well even then, but she had not been exposed to advanced languages and modern software. At the end of her thesis work, however, she had become very competent in these areas as well.

Once she focused on the doctoral research problems, she made reasonable progress and refined the aims of her studies to address intricate and very interesting dynamic effects of the binding of  $\text{Ca}^{2+}$ . While her work has benefited from extensive studies on the molecular dynamics of these proteins that were carried out earlier in the lab, Felicia developed an independent perspective on the problems and on the interpretation of the results. She devised a creative use of quasiharmonic vibrational analysis to characterize the modes connecting the *apo* and *holo* states of the proteins, and she found an interesting way to use the Green's function perturbation analysis (of sensitivity to specific parameters in the simulation) developed by our colleague, Chung Wong, to study the perturbing effects of  $\text{Ca}^{2+}$  binding in the various states of the molecules. Her analysis of Ca-induced perturbations is extensive, covers

several molecular systems including skeletal as well as cardiac troponinC, and has revealed some surprising aspects of the key transition in the activation of these proteins. These results are the subject of at least two publications of which she is very likely to be the sole author.

Felicia is a gifted, intelligent young physicist whose interest in macromolecular systems of biological significance has been broadened and undoubtedly refined further by the postdoctoral work in the Beveridge lab. Her scientific work so far has prepared her well for a career in research and teaching in computational molecular biophysics. Her presentations are thoughtful, carefully prepared and delivered clearly. She demonstrated here the ability to impart knowledge to others in organized and interesting talks. Many of her fellow students from the lab have achieved successful independent careers in first tier institutions here and abroad, and I trust that you will give her application the serious attention it deserves.

Sincerely yours,

Harel Weinstein