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Re: Postdoctoral Position  
Prof. Bogdan Dragnea and Prof. James A. Glazier  
The Biocomplexity Institute

Dear Prof. Dragnea and Glazier:

I recently obtained my PhD and am interested in pursuing bioengineering research, with a focus on biosurfaces and biopolymeric materials for tissue engineering. My graduate background includes applications of biopolymer physics and surface science and engineering in solving problems in biology. While working on my degree, I developed an interest in extracellular matrix molecules and cell adhesion. I believe that my experience with biopolymers combined with my bioengineering interests will allow me to add value to your research and advance my knowledge while in your laboratory.

My degree is in Applied Physics/Biophysics (and I am also a Chemist) and my PhD project was on the study of cell response of human cancer cells to artificial surfaces and patterns of glycosaminoglycans and proteoglycans. I utilized fluorescence microscopy, atomic force microscope imaging and ellipsometry as some of the research tools for my project. In addition, I have experience with molecular biology techniques, including cell culture, substrate radiolabeling, cDNA transfection of heparanase in human cancer cells, immunocytochemistry, western blots and related molecular biology techniques, all at a basic level, acquired during my work at Moffitt Cancer Center. I also have basic knowledge of characterization methods of glycoconjugate oligosaccharides, gained in a visit to the Complex Carbohydrate Research Center of the University of Georgia.

While a graduate student, my experience in preparing substrates and patterns of glycosaminoglycans induced me to look at applications into biological problems where they can be useful. I eventually applied for a fellowship to the National Academies (unfortunately it was unfunded) where I had to write a proposal on neuronal guidance within the scope of spinal cord injury, to engineer neuronal guidance by extracellular matrix molecules. The proposal outlined an idea that neuronal growth can be spatially controlled using multifaceted surfaces functionalized with specific molecules (glycosaminoglycans, among others) and that this guided growth could be useful in therapies for spinal cord injury.

With my interests in bioengineering and biophysics training, I think I can make significant contributions in areas requiring interdisciplinary knowledge. I am looking to join a laboratory where I can contribute my knowledge of substrate preparation and characterization while obtaining additional training in molecular biology. Broadly, my current and future interests include the study of the effect that physical, structural and chemical changes in biopolymers has in cell behaviour, particularly in cancer cells, neurons and stem cells. I am also interested in molecular dynamics simulations of biopolymers grafted to surfaces and in the development of techniques useful in cell adhesion, migration and stem cell differentiation useful for use medical therapies.

I would like the opportunity to discuss my research interests with you. Please let me know when you are available and I will call to speak with you. I look forward to hearing from you.

Sincerely,

Antonio Peramo