Biotechnologisches Zentrum

TECHNISCHE UNIVERSITÄT DRESDEN

Petra Schwille, Professor of Biophysics

2003-11-25

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

Re. Professional Reference for Dr. Svitlana Berezhna

To Whom it may concern:

This letter is to provide a professional recommendation for Dr. Svitlana Berezhna in her application to a faculty position at your Department.

I have the pleasure of writing this letter of professional support for my present collaborator Dr. Berezhna. I have known Svitlana in person since 2000. We met at the Biophysical Society Annual Meeting in Boston, where we had very interesting discussions. We work in related areas of optical methods applied to biophysics, and I was interested to establish a collaboration with Svitlana in development of the methodology for tracking single molecules in living cells. I invited her to join the "Biofuture" project in my laboratory at MPI for Biophysical Chemistry in Goettingen.

In 2002, Svitlana received a research fellowship from the Alexander von Humboldt Foundation in Germany and I am very pleased to host her in my laboratory during this year. This prestigious award is granted to internationally recognized scholars and Svitlana certainly deserves it.

At present, Svitlana is working on the development of single molecule detection techniques for imaging and visualization, and for dynamics characterization, of single fluorescent molecules in living cells. Svitlana plays a key role in this project due to her excellent knowledge with respect to optical methodology, image processing and software improvement, complemented by a solid background in biochemistry of lipids and proteins, and the important skill to recognize cutting-edge research projects. An important theme that drives her research under the award is the potential to monitor the dynamics of intracellular mitochondria and cytochrome c at single molecule level as important cell function as apoptosis is induced.

This specific project is extremely challenging because intracellular studies at the level of single molecules require consequent optimization of the optical setup, in combination with the creation of effectual data processing software. Moreover, certain key cellular processes, specifically those involving translocation of proteins from the interior of subcellular organelles such as

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mitochondria with subsequent targeting of a specific intracellular compartment or other protein molecule in the cellular interior, have not been approached by single molecule methodologies so far. This kind of pioneering work is especially important because the ability to understand and control the process of cytochrome c release from the mitochondria at the level of single molecules would likely have significant ramifications in our understanding the complexity of apoptosis mechanisms. Potentially, the results of this work can contribute to the ability to treat human cancer cells, many, if not all of which, display a strong resistance to apoptosis.

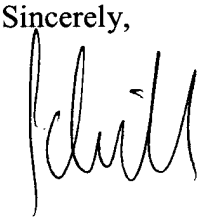
In parallel, Svitlana actively participates in other ongoing projects, which are related to probing a mechanism of lipoplex-mediate transfection of eukaryotic cells, and to studies of lipids interaction and dynamics using artificial membrane systems. Also, she has started to work on application of single particle tracking technique to probing micromechanical properties of the cells and their response to the different mechanical stimuli.

Dr. Berezhna closely supervises a biophysical PhD student in the laboratory. He strongly benefits from this collaboration and his progress has significantly speeded up since Svitlana joined our group. She is a very good team worker. It is also a pleasure to communicate with Svitlana at personal basis, with her good sense of humor and well-roundedness.

I can describe Dr. Berezhna as an extremely gifted optical physicist. Specifically, she possesses unique expertise in creation of new optical instrumentations and very good ideas for applications of optical techniques to vital problems of cell biology. Moreover, she has strong analytical skills and a wide scientific scope. Her knowledge in molecular biology and biochemistry, which are not her major fields, is impressive. Without hesitation, I would classify Svitlana as a highly competent scientist and an extremely intelligent personality.

The skills of Dr. Berezhna will benefit her employer, the U.S. and the international scientific community. I would by all means recommend her for a faculty position in the field of experimental biophysics.

Sincerely,



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