



National Institutes of Health

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Faculty Search Committee
c/o Professor James Glazier
Department of Physics
University of Indiana
Swain Hall West 117
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October 10th, 2003

RE: Dr. Liviu Movileanu

Dear Chair of the Search Committee:

I am writing this letter to lend my full support to Dr. Liviu Movileanu's application for a faculty position at your university.

I am the Chief of the Section on Molecular Transport, Laboratory of Physical and Structural Biology at the National Institute of Child Health and Human Development, NIH. I have published more than 90 articles in peer-reviewed scientific periodicals and books, including 5 in *Nature* (London). I have chaired and organized many national and international symposia including the Third International Conference on Unsolved Problems of Noise and Fluctuations in Physics and Biology (September 2002, Washington, DC). Currently I am on the scientific directors' boards of two international meetings, and the chairperson of the Second International Conference on Fluctuations and Noise in Biology (May 2004, Gran Canaria, Spain). I am an Executive Editor (biophysics and biomedical systems) of the international journal '*Fluctuation and Noise Letters*.' I, therefore, feel that my judgments concerning Dr. Liviu Movileanu can be useful in your deliberation.

Dr. Movileanu was trained as a physicist, who, while continuing his education in Romania, chose to work on biological systems. This is rather unusual background considering the typical route to biological studies in the U.S. being from biological sciences. As a result, very few U.S. trained biophysicists have the rigorous expertise of statistical physics and polymer theory required to conduct the kind of work that Dr. Movileanu is known for.

I have been attracted by Dr. Movileanu's work since I came across his research on the dynamic behavior of a protein pore containing a single polymer chain. The work was first reported at the Biophysical Society Meeting in New Orleans two years ago (with Dr. Movileanu as the presenting author) and then published in the prestigious *Journal of American*

Chemical Society. Dr. Movileanu was the first researcher to demonstrate that the channel recordings could be used as a tool for studying the dynamic properties of poly(ethylene glycol) and other polymers at the single molecular level. The importance of this study for biology is obvious: numerous cellular processes require translocation of biopolymers across membranes of cells and organelles. Understanding of the main physical principles of this translocation is paramount for the future progress in biology and medicine. In the concluding part of the paper he also suggested a possibility to create biosensors based on a new class of 'engineered pores'.

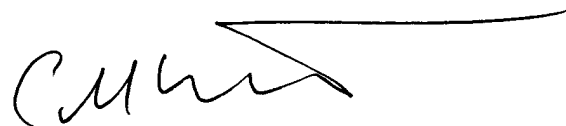
This possibility was soon realized in a number of Dr. Movileanu's brilliant publications. In the paper published in *Nature Biotechnology* (October 2000) where Dr. Movileanu is the principal author, he has shown that a poly(ethylene glycol) chain tethered in the alpha-hemolysin pore could be used as a new type of biosensor element for protein detection in nanomolar concentrations. The reversible association between a biotin molecule covalently attached to the free end of the polymer and a mutant biotin was ingeniously used to observe transient events of protein analyte capture. This groundbreaking study presents a superb example of how much the intersection between electrophysiology, biochemistry, and physics can achieve if explored by an expert of Dr. Movileanu's caliber. Then followed important publications in the *Journal of General Physiology* and *Proceedings of the National Academy of Sciences USA*.

It comes as no surprise that Dr. Movileanu's groundbreaking findings have received well-deserved media coverage. The list of journals praising his achievements includes best scientific periodicals such as *Science*, *Nature Biotechnology*, *Double Twist*, and *Journal of General Physiology*. Because of his recognized expertise, Dr. Movileanu has been frequently called upon to serve as a reviewer for several prestigious international scientific journals including *Biophysical Journal*, *Biopolymers*, and *Biochimica et Biophysica Acta*.

To sum up, I strongly suggest that Dr. Movileanu be considered a rising star among biophysicists of his generation, and I can attest to his high interdisciplinary competence and distinguished reputation. Dr. Movileanu has already made significant contributions to the biophysics of ion channels and membrane transport. His work represents a clear example of the highest scientific standard.

Please do not hesitate to contact me if I can provide any additional help.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'S. Bezrukov', with a long horizontal line extending to the right from the end of the signature.

Sergey Bezrukov, Ph.D.