

University of Illinois  
at Urbana-Champaign

Beckman Institute  
405 N. Mathews  
Urbana, IL 61801

Klaus Schulten, PhD  
Tel: (217)244-1604  
Fax: (217)244-6078  
Email: [kschulte@ks.uiuc.edu](mailto:kschulte@ks.uiuc.edu)  
WWW:<http://www.ks.uiuc.edu/>

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

To Whom it May Concern:

This letter is written to enthusiastically support the application of Dr. Emad Tajkhorshid for a faculty position in your department. I have known Dr. Tajkhorshid as a colleague and friend since he joined my group, first as a senior postdoctoral associate and now for the past two years has joined me in our NIH Resource for Macromolecular Modeling and Bioinformatics as associate director. Dr. Tajkhorshid is a gifted and productive researcher, a prominent expert in the field of membrane proteins, a committed teacher, an excellent organizer, and a wonderful colleague who would be a great addition to your faculty.

Let me first comment on Dr. Tajkhorshid's outstanding credentials as a scientific investigator. Before starting his second postdoctoral fellowship in my group, he had two short visits to my laboratory from Germany in 1998 and 1999, both resulting in top original research publications in American journals, obviously reflecting his hard work, bright mind and enthusiasm for scientific projects. Dr. Tajkhorshid joined my research group as a senior postdoctoral fellow in July 2000 and was soon promoted to Assistant Research Director of the group. Today he directs with me jointly our NIH Resource, as pointed out above. In 2001, Dr. Tajkhorshid started a new research project investigating the function of biological water channels. The project turned out to be one of the most successful scientific projects in the 30 year history of my research group. Imparted by his deep knowledge in chemistry, biochemistry, and biophysics, the project resulted in significant new discoveries about the function of these channels, as evident by several world class publications in such high-profile journals as the Science magazine and the Proceedings of the National Academy of Sciences of the United States of America. His results elucidated for the first time the mechanism underlying a highly selective transport system in biological cells, with substantial implications on the physiology of the human body, in particular, on several common diseases of the kidneys and other organs, and therefore are of great relevance and importance in medicine. His work has been cited prominently on the Nobel Foundation web site in connection with Peter Agre's 2003 Nobel Prize in Chemistry. Presently, Dr. Tajkhorshid is expanding this branch of his research toward ion channels that are key components of the nervous system. He has also been actively pursuing his previous field of interest in photoreceptors, which has been recently extended to the investigation of spectral tuning and color vision and the activation mechanism of visual receptors.

Looking over his recent publication record one is amazed about the high level of productivity and quality of his work. The large number of excellent publications have been possible only because Dr. Tajkhorshid enjoyed excellent collaborators. What has been his specific role then in all this work. First, it is fair to say that he has been the leader of the aquaporin project in my group. The success of this project is really mainly his. He was extremely stimulating through his knowledge and great example of hard and

excellent work. Also, the work on retinal proteins owes much to him, though here one needs to admit that the achievement needs to be attributed in equal part to Dr. Shigehiko Hayashi, a postdoctoral colleague of Dr. Tajkhorshid. But through his recent and prior work, Dr. Tajkhorshid is definitely considered one of the three leaders in retinal protein theory today. The great ability of Dr. Tajkhorshid lies in his hands-on experience in molecular modeling. He is outstanding when it comes to getting projects off the ground, advising new students, selecting research strategies, and motivating collaborators. Dr. Tajkhorshid is also well connected such that he is always extremely well informed about key development in his field.

As is clear from his long list of publications (over twenty during his four years in my group), Dr. Tajkhorshid has made outstanding contributions to the field of computational biology, which is somewhat expected considering the combination of his hard work and strong background in chemistry, biochemistry, and pharmacology. Considering his scientific and technical experience, I can state without hesitation that Dr. Tajkhorshid is one of the world leading researchers in the field of computational biology and one of the five best researchers today in the theory of membrane proteins. Due to the extremely important roles of membrane channels in biology, he is in a unique position for the advancement in this field of science.

Dr. Tajkhorshid is an extremely talented person with a strong background in biological and biophysical sciences. He is a very motivated, productive, and original young researcher. I have worked myself on biological problems for more than 30 years with great collaborators, but I have never had a coworker like Dr. Tajkhorshid who deeply loves his field of research and has the a broad, strong background combining medicine (pharmacology), chemistry as well as computing. It has been an absolutely amazing experience for me to have a younger collaborator who could be my academic advisor both in regard to the basic motivation for the research and for the professional knowledge. I am embarrassed to admit this, but Dr. Tajkhorshid is simply better than myself in modeling of membrane channels and retinal proteins. Naturally, to have performed so productively and advanced so quickly requires some unique strength on the part of Dr. Tajkhorshid, namely, a great intellect combined with discipline, dedication, focus, and hard labor.

Dr. Tajkhorshid has excellent communication skills. In addition to his own research efforts, he has been working closely with other postdoctoral associates and has supervised several graduate students in their research. Dr. Tajkhorshid has taught courses in our university's School of Life Sciences (on membrane biophysics) and received outstanding praise from his students. I expect him to become an an affiliated Professor of our School of Life Sciences before the end of the year.

Dr. Tajkhorshid has been instrumental in the development of a new hands-on training course in computational biology at our university. The course has been taught to our students, but also on three occasions (summer 2003, summer 2004, November 2004) as a summer school and workshop to researchers (students, postdocs, and faculty) from the US and abroad. Through his initiative, the course has received generous funding from NIH and NSF and four more workshops are planned already. Dr. Tajkhorshid is a key teacher of lectures. but also a main developer of tutorial material for hands-on training on laptops provided to the course participants.

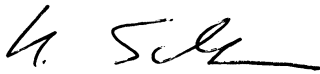
Dr. Tajkhorshid has been invited to prestigious conferences to present the results of his research, which reflects the general interest of the scientific community in his research. I had a few opportunities to observe him giving presentations at several conferences, where all my colleagues shared my strong impression. In fact, during the 1st (2004) Biophysical Society meeting he had two invited lectures and it was clear that Dr. Tajkhorshid is one of the rising stars in Computational Biology today.

Dr. Tajkhorshid always tries to establish collaborations with other research groups in his endeavors. He also has a lot of experience in coordination and writing of research grant proposals and reports. Before joining my group, he coordinated and established an international consortium of six groups in five countries that was funded by the Human Frontier Science Program organization for three years. In my group, he has been instrumental in the preparation of several proposals, and he is co-principal investigator of one of our major research grants funded by the National Science Foundation. My group's success in obtaining over \$1.5 million funding a year for biomedical research is to a great part due to his effort. I expect him to be successful in obtaining grants both because of his timely research orientation (membrane proteins), the quality of his work, visibility, his genuine interest in teaching and outreach, and his exceptional ability in preparing grants .

In summary, I believe that Dr. Tajkhorshid is an outstanding researcher, uniquely experienced, capable in his field of research, and he would be an excellent researcher and teacher in your academic department. I would like to reiterate that I could hardly find anybody else whom I could recommend more strongly to you than Dr. Tajkhorshid. In fact, I also recommend Dr. Tajkhorshid strongly to my own university for faculty hire.

I will gladly provide any further information, e.g., by e-mail ([kschulte@ks.uiuc.edu](mailto:kschulte@ks.uiuc.edu)) or telephone (217-244-1604).

With best regards,



Klaus Schulten  
Swanlund Professor of Physics