



MOLECULAR BIOPHYSICS & PHYSIOLOGY

December 11, 2003

Search Committee
Department of Mathematics
Indiana University
831 East 3rd Street
Rawles Hall,
Bloomington, IN 47405-7106

Re: Letter of recommendation for David Holcman

Dr. Holcman has applied for a position in your department and asked me to write to you about him. I met David at a conference on PDEs in 2000 and got him interested in my project on ionic channels. Before that David has done work in differential geometry and on singular perturbations in elliptic PDEs, closely related to my previous work. His interest in computational biology led him to initiate several joint research projects in molecular biophysics with me and with leading people in neurobiological research, including M. Segal and E. Korkotian at the Brain Research Center, Weizmann Institute of Science, Rehovot, Israel, and with D. Kornbrot in the UCSF Medical Center.

David's work on neuronal spines (with me and E. Korkotian) has led to a prediction that was recently verified experimentally by M. Segal. This is a significant contribution to the understanding of the physiological function of the actin-myosin protein molecules in the conduction of nervous signals. The result was achieved by purely physical reasoning and mathematical modeling of the neuronal spine. The physical and physiological understanding gained here is all due to David's insight. David's further work on chemical kinetics of reactions that involve only a small number of molecules, on the role of geometry in chemical kinetics in these reactions, and on the dynamics of receptors on spinal membranes opens new vistas for physical and mathematical research in molecular biophysics.

David is a fast learner, very aggressive in his attitude to science, and a very hard worker. He shows great promise in applied mathematics of molecular biophysics and should be given an opportunity to develop. I strongly recommend him for your department.

Sincerely

A handwritten signature in black ink, appearing to read 'Zeev Schuss', written in a cursive style.

Zeev Schuss
Professor of Applied Mathematics
Department of Applied Mathematics
Tel-Aviv University