December 14, 2004

Biocomplexity Faculty Search Committee
C/o Prof. Rob de Ruyter can Steveninck
Dept. of Physics, Indiana University, Swain Hall W117
Bloomington, IN 47405-7105

RE: Dr. Daniel Forger's application for a faculty position

Dear Members of the Search Committee:

I am delighted to write to you about Daniel Forger's application for a faculty position.

I first met Danny about 6 years ago. I was a member of the External Advisory Committee for the Training Program in Sleep, Circadian and Respiratory Neurobiology (funded by NIH/NHLBI) at Harvard Medical School. At that time Danny was a trainee in the program. He gave a presentation on his work developing a model of the circadian oscillator. I was impressed with Danny's close working relationships with several experimental groups (who otherwise did not appear to interact with each other), and the clarity of his model predictions that were relevant and testable. Not surprisingly, we concluded in the Advisory Committee Report that Danny was one of the strongest assets of the Training Program, with his unique ability to integrate large and complex data sets at different levels of biological organization.

I recruited Danny to join us at the Marine Biological Laboratory in Woods Hole during the subsequent summers. John Clay and I were planning experiments on a squid giant axon preparation that was bistable, able to exhibit either repetitive firing or subthreshold activity. We knew the neuron could switch between these two states, but it was not clear how to flip the switch. Danny participated in these experiments, and he suggested a simple method of inducing the switch using a voltage clamp technique. This suggestion turned out to be a key to the success of the experiments. Danny participated in the development of a method of using stochastic stimulation of the membrane, which was based on a model that he developed of multisynaptic excitatory and inhibitory post-synaptic potentials. Using his stimulus protocol, we went on to generate a large data set of the bistable neuron's response to stochastic stimulation. From this data set, Danny has

developed a generic model of a bistable neuron, and has shown that its response to stochastic stimulation is predictive of the actual experimental results. We are excited about testing his model's predictions in future experiments on other neural oscillators that appear to be bistable, namely the neurons that control breathing in mammals.

Danny is an exceptionally talented young scientist who has remarkable insight into biological processes. He has insatiable curiosity, and the highest level of energy and drive to complete what he sets out to accomplish. But I would like to emphasize what I find most appealing in this young genius: kindness, generosity, and integrity. He is simply a terrific colleague. This will enable him to interact with many different scientists with quite different backgrounds in the interdisciplinary field of biological modeling. This trait I think will catapult Danny to the highest level in his field.

Sincerely,

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Professor of Neurology & Physiology

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