RICE

Physics and Astronomy Department

November 26, 2003

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

Dear Search Committee,

I am writing in support of Jordan Gerton's application for a tenure-track position at your university. Jordan is an outstanding scientist, who has a demonstrated track-record for success in many arenas.

I had the good fortune of supervising Jordan's Ph.D. research in physics at Rice University. Jordan was one of the most successful of all my graduate students, several of whom are now on the faculties of major universities. Jordan did his thesis work on our Bose-Einstein condensation experiment. The two students who preceded him on this experiment set a very high standard and I was frankly concerned that Jordan would not be able to maintain their rate of progress. I could not have been more wrong. Jordan took over an extremely difficult apparatus, quickly mastered it as his own, and added a significant improvement that enabled him to produce a major research result that was published in *Nature*. The improvement was a phase-locked diode laser system that produces two frequencies separated by 12 GHz, but with sub-Hz relative accuracy. This laser system was used to drive a stimulated Raman transition between lithium atoms in a Bose-Einstein condensate and a vibrational level of the diatomic lithium molecule. Because of the incredible energy resolution of the transition (linewidth of <300 Hz), Jordan was able to selectively remove the condensate from a thermal Bose-Einstein distribution function and observe the dynamics of condensate growth. Furthermore, because lithium has attractive interactions at low temperatures, the condensate is unstable to collective collapse. Jordan's technique enabled the first direct observation of the growth *and* collapse of a Bose-Einstein condensate.

After obtaining his Ph.D., Jordan decided that biophysics presented more opportunities than atomic physics and he took a post-doctoral position with Steve Quake at Caltech. Although he had no formal training in biology, with characteristic hard work and determination, he has brought himself to the point of making significant contributions to biological problems in a relatively short time. Jordan currently holds a Beckman Fellowship at Caltech where he continues to work on combining optical microscopy with AFM, a technique that achieves

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nanometer resolution using an optical probe. A paper reporting these results has been submitted to the Physical Review Letters.

Jordan has several outstanding personal qualities that contribute to his success. He is probably the most optimistic and happiest person that I know - important, and perhaps under recognized qualities for successful experimentalists. He is truly a joy to interact with, and is an especially positive force in a group. I believe that these qualities will serve Jordan well as a research group leader. Jordan also has great capacity for hard sustained work. Perhaps his experience as a top NCAA swimmer as an undergraduate (on an NCAA national championship team) contributed to his ability to focus on a goal. Jordan is quite creative; his ideas had a significant impact on the directions of my research program. Finally, Jordan is an exceptionally good oral communicator, both in front of an audience and in individual conversations.

In summary, I enthusiastically recommend Jordan to you as a prospective faculty member in your department.

Sincerely,

Randall G. Hulet
Fayez Sarofim Professor of Physics