

December 10, 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 Prof. de Ruyter:

I am pleased to provide my strongest recommendation for Dr. Sridhar Raghavachari who is applying for a faculty position in computational neuroscience at IUB. Sri is an outstanding candidate for a neuroscience faculty position. Of all my graduate students, he was clearly the best, on a par with the best students at University of Chicago or Harvard. His research with me was both wide ranging and deep, focusing on the collective behavior of coupled neurons.

I want to emphasize that Sri's work since his Ph.D. has taken him in completely different directions from his Ph.D. research and that he has now made important contributions at all length scales from individual ion channels to systems neuroscience.

During his Sloan Postdoctoral fellowship and his subsequent NARSAD fellowship he has become intimately involved in experimental neuroscience and detailed biorealistic modeling. Despite his breadth, his technical foundations are completely solid. He is equally at home with heavy analytics (*e.g.* the fine points of renormalization group and replica symmetric calculations for neural networks), computation and experimental analysis. He also enjoys working closely with experimentalists both in experimental design and data analysis. He is extremely independent and self-taught. I have yet to find a problem too difficult for him to solve or a technique too complex for him to teach himself. He is also a real intellectual. His course work included not only graduate level courses in the mathematics, chemical engineering, electrical engineering and biology departments but also English literature and art history. I feel privileged to have had him as my student.

During the time he worked with me he published two papers on DNA sequence analysis (in *PRE*), and two on the chaotic dynamics of coupled map lattices (published in *Physical Review Letters*). Each of these papers has been of real importance. Sri is modest and exacting, reluctant to publish anything that does not reach his very exacting standards of novelty so his Ph.D. thesis contains a good deal of additional research beyond his publications. The paper on fractally coupled oscillators was genuinely ahead of its time, substantially earlier than the current boom in fractal networks – in fact Laszlo Barabasi learned about fractal

connectivity issues from Sridhar, so in many ways Sri was a founder of the fractal network field. His publication record in his postdoctoral position is similar, with a limited number of publications of extremely high quality in important journals. He is certainly ready for an independent faculty position. His research plan is detailed, well thought out, addresses a set of crucial issues and has a high probability of success.

Sri made the leap from theoretical physics to biology with great seriousness. He began in 1995 by attending the Computational Neuroscience course at Woods Hole (taught by Tank and Kleinfeld), which proved exciting and useful in developing more biologically realistic approaches to neural network modeling. He was also a student at the Santa Fe Institute. In 1996 he attended the Les Houches summer school *From Cell to Brain* and the American Mathematics Institute in Theoretical Biology in 1999. His participation in these varied programs demonstrates his broad ranging and extraordinary ability. His decision to do his postdoctoral work with John Lisman in neuroscience took real courage and has provided him with the strong biological training needed to make a useful contribution to the field.

As a teacher, Sri is relaxed, clear, articulate and patient. He was popular as a TA as a graduate student and makes the effort to do a fine job. Despite his quickness he is good at understanding the conceptual difficulties of students and helping them to overcome them. I expect he will be a popular lecturer both at the graduate and undergraduate level.

Sri has been fortunate that his extended postdoctoral career has given him the freedom and independence to learn new techniques and to think without having to worry too much about the grant and publication rat race. However, both as a graduate student and a postdoc he has done a substantial amount of grant preparation and he has the discipline, experience and ability to write successful grant applications. I expect he would be successful in seeking funding even if his area of research were not such a hot topic at the moment.

Sri is collegial but also completely independent. He will have no difficulty defining and implementing his own research program but will also adapt to the opportunities and needs of your department. He shows real taste in his choice of problems and methods. He writes well and is a fine speaker. If he is given the opportunity I predict an outstanding academic career. I could see him solving some of the big, hard problems in contemporary theoretical neuroscience. You owe it to yourself to give him the chance.

Sincerely,

James A. Glazier
Professor of Physics
Director, Biocomplexity Institute