Brandeis University

Volen Center, MS 013
Waltham, MA 02454-9110

L.F. Abbott
Professor of Biology
phone: (781)736-2876
fax: (781)736-3142
abbott@brandeis.edu
http://people.brandeis.edu/~abbott/

December 2, 2003

Letter of Recommendation for Sridhar Raghavachari

Sri Raghavachari is a postdoc working in John Lisman's laboratory whom I have gotten to know well over the years. Sri was originally hired as one of our Sloan Center of Theoretical Neurobiology postdocs. This program is designed to bring people from physics, mathematics, computer science, and engineering into neuroscience research and Sri was a prefect match. It took him a while to make the transition from one field to the other, as it has many of our Sloan trainees, but in the past several years he has become an excellent computational neuroscientist. He has worked on a variety of topics, always with skill, insight and precision.

Sri did some interesting analyses of recordings taken from human subjects awaiting surgery for epilepsy with Mike Kahana's group here at Brandeis. He played an important role in this collaboration with his analytic and computational skills. Their results suggesting a role of theta oscillations in exploratory behavior during virtual navigation tasks and in memory retrieval are quite intriguing. After that, Sri collaborated with Xiao-Jing Wang's group and the Goldman-Rakic laboratory on a study of the firing properties of neurons in the prefrontal cortex of monkeys. These neurons exhibit persistent activity that appears to be related to short-term memory. Sri then constructed an interesting model (with Koulakov and members of the Lisman laboratory) of neuronal circuits that can act as integrators. This model is proposed as the biophysical basis for the persistent activity seen in the monkey prefrontal neurons he studied with the Wang and Goldman-Rakic groups, and also for neural integrators in motor circuits such as the oculomotor system. The novel feature of the model is a staircase-like sequence of stable states, which allows robust sustained activity without fine tuning of parameters. It is a nice addition to the literature on the subject and has received a lot of attention. Finally, in his most recent project Sri studied synaptic vesicle release and transmitter binding to postsynaptic receptors. I find it to be the most interesting of the several fine projects that Sri has done at Brandeis. It illustrates, as do the other projects, his care and skill at constructing models and analyzing them and the associated data.

Sri is an excellent example of a person who has crossed disciplinary boundaries and applied strong analytic skills to problems in neuroscience. He can communicate well with people on levels ranging from abstract modeling to basic biophysics, synaptic and cellular physiology, and all the way to behavioral experiments. He would be an excellent choice for places looking for someone to cross department boundaries and seeking a theorist who is well equipped to analyze, model, and interpret experimental data.

Sincerely,