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Trieste, November 9th 2004

On behalf of the application of Dr. Marco Canepari.

I am very glad to support the application of my former PhD student, Marco Canepari, for a position in your Institute. I met Marco for the first time in October 1995 when, he was enrolled in the PhD program at SISSA after obtaining the degree in Physics at the University of Genova.

At SISSA, Marco was first engaged in a project aimed at developing (in collaboration with Dr. Mammano) a fast and high space resolution system for calcium imaging. This was based on the construction of a 12-bit A/D board to be applied to a commercially available CCD camera. With this apparatus he succeeded to analyse calcium signals generated by calcium entry through single or trains of action potentials in cultured hippocampal cells and in hippocampal slices. Using AM-esters calcium dyes, he was also able to see how calcium signals propagate among a cluster of neighbouring cells. Then he undertake under my supervision a project aimed at understanding the presynaptic mechanisms underlying short term synaptic plasticity processes in the CA3 area of the hippocampus. This research constituted the core of his PhD thesis that he defended at the end of February 1999. In particular, using trains of action potentials he was able to record EPSPs evoked by minimal stimulation of presynaptic fibres in different experimental conditions (different extracellular calcium concentrations, different frequency of stimulation) and to develop a dynamic quantal theory that takes into account the previous history of the synapses. These are difficult and long-lasting experiments and Marco did them with great enthusiasm. All these different pieces of work have been published in leading international journals.

In the last years in London he investigated under the supervision of Dr. David Ogden, the properties of metabotropic glutamate receptors at cerebellar parallel fibre-Purkinje cell synapses. To this purpose he combined electrophysiological (patch clamp under different configurations) and imaging techniques to monitor calcium dynamics during metabotropic glutamate receptor activation. He has also used flash photolysis to rapidly release glutamate from novel caged compounds developed at NIMR. He came few months ago to SISSA to give talk on his recent findings and in that occasion I had the opportunity to discuss with him the work he is carrying out in London. I have to say that his work is very timely and innovative.

Marco has a lot of initiative and he is highly inquisitive. He acquired the capability to develop sophisticated and dedicated software to analyse his own experiments. He is a very dedicated person able to do his experiments in a completely independent way His friendly nature has helped to establish a good working relationship with other members of the lab.

I consider Marco among the best 10% of the students we had in the past years and I fully support his application to continue his research career in a very stimulating environment. I am sure that he will be able to organise his own laboratory and to build up a small team of young neuroscientists who will be trained by him and to foster collaborations with other groups and colleagues. He has a solid background in physics and biophysics. Marco is a very "solid" scientist with a lot of enthusiasm.

I am sure that Marco will be a very good candidate for the position he is applying for and he will be an asset for future research in your Institution.

Yours sincerely,

Enrico Cherubini
(Prof. of Physiology)