Final Report

Thanks to NENS Stipends for Training Stays, I had an unique opportunity to consolidate my scientific background improving not only my knowledge in neuroscience field but also my autonomy, responsibility and self awareness in research work.

I spent these three mouths in the Neural Microcircuitry Laboratory (LNMC) at Brain and Mind Institute, a place leader in the world for study neuronal network organization from both experimental and theoretical point of view.

Since the first day I have been there I had the positive feeling of being in a scientifically prolific place where the knowledge is valorized, sheared and exchanged, where people with different culture and study backgrounds join their experience to realize a common interdisciplinary project, I find this simply great! Because of this lively and dynamic atmosphere I had the possibility to capitalize at best the time learning a lot of different techniques and working methods.

In the first mouth, I focused my attention on neuronal cell culture setting and improving the technique of microculture preparation applied at hippocampal neurons. These two main characteristics: the high control in neuron distribution and great reliability of the data make the microculture system an useful tool to study, from a very close point of view, the neuronal interaction with other elements like cell types, chemicals, drugs or also new materials and substrates such as Carbon Nanotubes (CNT).

Next step, in the future will be that of combining CNT and microculture technique in order to deeply understand the nature of nanotube-neuron interaction that is still for a large part unknown.

In the following two mouths I focused my attention more in electrophysiology learning the multipatch clamp method pioneered by Prof. Markram and now highly developed in his laboratory. Thank to the advanced technologies offered me, I have been able to patch four cells at the same time, to study the spontaneous activity and synaptic connection properties of the neuronal micornetworks. In order to better characterize the cells present in this culture distinguishing neurons against glia cells I learned and applied some immunohistochemistry protocols.

I attended also the course hold by Wulfran Gerstner “Neural Networks and Biological Modeling for Life Science” acquiring more specific skills in computational neuroscience and in the end I've been invited to take active part in a collaboration project between LNMC laboratory and Institute of Microtechnology of EPFL.

For what concerns language abilities using English in every day conversation at work and outside in normal daily life I've improved my speaking and listening skills, moreover I attended a French class obtaining a certification of level A1.

To conclude this opportunity has been really important for my professional growth and personal enrichment, I'm deeply satisfied and I hope to have the possibility, after achieved the master degree, to continue the project started now, with a PhD in neuroscience.

Thanks to NENS organization for having gave me this opportunity of personal and professional enrichment.

Best Regards

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