Lab Visit Report

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Location of visit: Prof. Atkinson’s Lab, University of Texas in Austin (UT), Texas, USA. Host: Prof. Nigel Atkinson and Dr. Alfredo Ghezzi.
Funding: ISN-CAEN category 1A

Overview of the Lab visit

My stay was from 1st of April to June 30 of 2014 at Austin, Texas. The first day I was warmly welcomed by Dr. Ghezzi. Who booked for me a nice room in a great house near to UT, where I shared with a great couple (Esti & Christoph) all my stay. On the first week I was officially registered at UT as visit student and introduced by Dr. Ghezzi to Prof. Atkinson and him research team.

I received hands-on to setup an electrophysiological rig to measure Local Field Potentials (LFP) in in-vivo *Drosophila* brain. Also I had some experience in chromatin immunoprecipitation with massively parallel DNA sequencing (ChIP-seq) and some behavior assays to study ethanol exposure phenomena.

During my stay in UT I learn the use of an electrophysiological rig and the equipment needed: Amplifier, analogous/digital converter (Digidata) and software to measure LFPs in specific *Drosophila* brain regions.

First I familiarised with electrophysiological equipment and his use, so also with the software used for recordings (pClamp software). During the first month with the help of Dr. Ghezzi help I designed a recording camera to fix awake flies and perfund recording solutions over the head fly while it were recorded. Finally I used a manufactured recording camera modified of the used before in Wilson et al., 2004. In Fig.1 shows a picture with the recording camera with a fly hold below is showed.

During the second and third month I be able to make some trial experiments using wild type flies and previously manufactured electrodes, during this time I recorded LFPs from in-vivo *Drosophila* and learned some about data analysis for this experiments. in Fig.2 (also

attach a video with spontaneous LFPs) shows an example of the LFPs signals recorded during my stay in UT.

Also I learned the reconditioning of tungsten electrodes to reuse, a really simple method described before in Verhagen et al., 2003 that allow to us reusing the same electrode to several experiments, which is a advantage for the lab where I work since make less expensive this technique. Also we tried to set a method to mark the recording brain area, however we do not have enough success on it.

In this stay I had planning to obtain relevant data for the objective 3 of my PhD thesis and although some experiments corresponding to this was performed, the samples was no enough to make conclusions. So this is a work in pause while we are setting the electrophysiological rig in our lab.

Relevance to my Research

The work that I performed at UT with the help of Prof. N. Atkinson and Dr. A. Ghezzi had significantly improved my knowledge and understanding of electrophysiological techniques used in neuroscience, and to be part of Atkinson's Lab allow me to help in other techniques used for this team. During my stay I felt really comfortable in Atkinson's Lab and could participate in several discussions of other PhD's works as also the discussion during papers writing.

Acknowledgments

I would like to thank CAEN and ISN for providing funding. I also want to appreciate to Dr. Nigel Atkinson and Dr. Alfredo Ghezzi for their generosity and technical support during my stay in this Lab and also I would like to thank to all the people worked in the lab during my stay, all the people who shared with me good conversation or a coffee. And all the friends that I made, which becoming to Austin in a great place to live.

Figures and pictures

Figure 1. Above: picture with the recording camera with a fly hold below is showed. Right bottom: Head fly with a tungsten electrode inserted is showed.

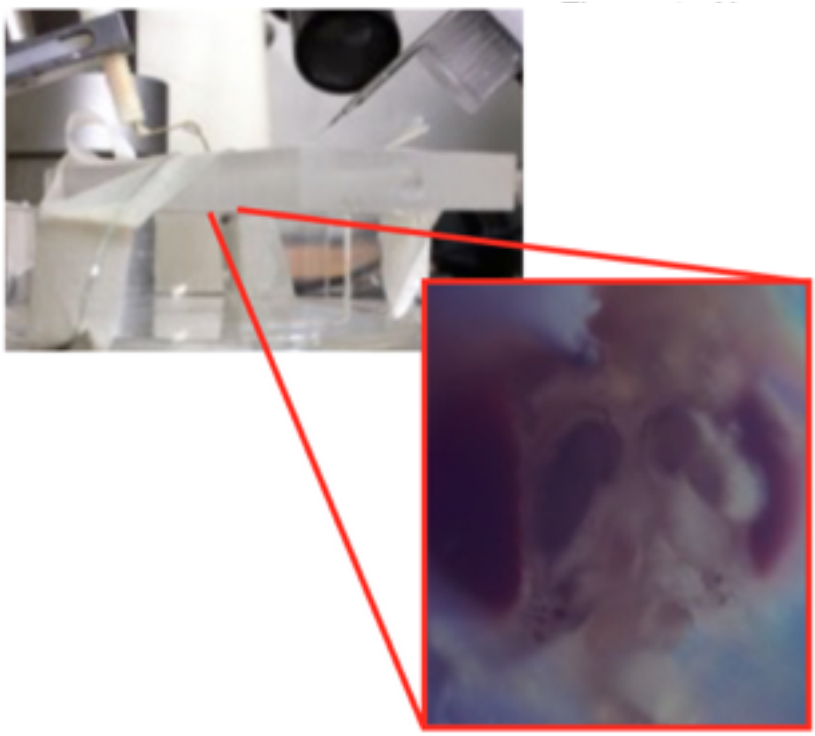
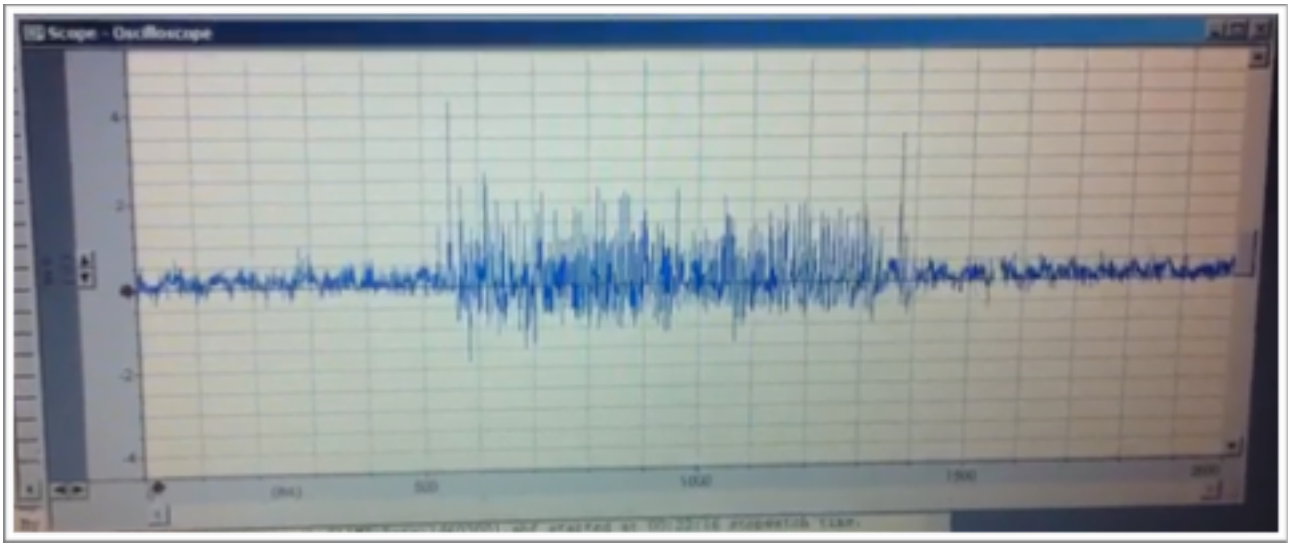


Figure 2. An example of the spontaneous LFPs signals recorded from Mushroom Bodies in a fixed fly.



References:

- Verhagen, J. V., Gabbott, P. L., Rolls, E.T. (2003). A simple method for reconditioning epoxy-coated microelectrodes for extracellular single neuron recording. Journal of Neuroscience Methods, 123(2) 2003, 215-217.

- Wilson, R. I., Turner, G. C., & Laurent, G. (2004). Transformation of Olfactory Representations in the Drosophila Antennal Lobe. Science, 303 (5656), 366–370.

Miscellaneous Photos: