

# **NENS Training Stay Report**

## **Theodora Kalpachidou**

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Home Lab: Biology-Biochemistry Lab, School of Health Sciences, University of Athens, Greece

Host Lab: Department of Zoology and Developmental Neurobiology, Institute of Biology, Faculty of Natural Sciences, Otto von Guericke University, Magdeburg, Germany

My training stay in Professor's Braun and Professor's Bock laboratory in Magdeburg lasted for one month. During this month I got familiar with a model for early life stress (ELS), namely maternal separation, and trained in molecular methods to study epigenetic modifications. Furthermore, I was able to perform Golgi-Cox stain and use a cutting edge technology software for neuron tracing, analyzing and 3-D reconstruction.

In this particular ELS model, maternal separation is applied from postnatal day 14 to postnatal day 16. In order to test if this experience influences the development of brain and behavior, I was trained in molecular techniques for the analysis of histone modifications and DNA methylation. Specifically I was involved in a project that analysed: 1) the total protein levels of the acetylated histones H3 and H4 via Western blotting, 2) the association between the levels of the acetylated H3 and/or H4 and the expression of genes involved in synaptic plasticity, using native chromatin immunoprecipitation – quantitative PCR (nChIP-qPCR) and 3) the methylation profile of gene promoter regions, also involved in synaptic plasticity eg Arc, using bisulfite pyrosequencing.

The second part of my training involved the performance of Golgi-Cox stain on pre-fixed mice brains, the 3D reconstruction of neurons and dendritic spines and the subsequent analysis of the results employing the Sholl analysis, using the NeuroLucida neuron tracing software. In addition, in direct relation to my PhD, I was able to morphologically analyse the dendrites and dendritic spines of Golgi-Cox stained brain sections of animals that had been subjected to the neonatal T-maze experience, which is the early life experience employed in my home laboratory.

Overall, this experience has provided preliminary results (neuron analysis), as well as valuable knowledge that will be transferred and used in my home lab (molecular techniques). Furthermore, I was able to get involved in a network of international PhD students and renowned neuroscientists, present my research and results and get useful feedback. I would like to thank the FENS Committee of Higher Education and Training for this opportunity.