

## NENS Stipend Report

Student: Felix Chan

Period of placement : 7 May 2016 – 8 July 2016

Home institution: Institute of Neuroscience, Newcastle University, Newcastle upon Tyne, United Kingdom

Host institution: Department of Drug Design and Pharmacology, University of Copenhagen, Copenhagen, Denmark

Host supervisor: Professor Helle Waagepetersen

It was a great pleasure for me to receive the NENS Exchange Grant that enabled me to visit the lab of Professor Waagepetersen in Copenhagen, Denmark. Professor Waagepetersen's lab routinely employed analytical biochemistry techniques to interrogate brain metabolism in various states of physiological and pathological condition. In particular, her expertise in the metabolic pathway of glutamate-glutamine recycling is respected internationally and it was a great honour for me to spend some time training under her wing.

My PhD project has been focusing on developing a novel model for mitochondrial epilepsy in *in vitro* brain slice preparation. The model utilizes pharmacological manipulation based on the 'double-hit' hypothesis, where we propose that an astrocytic and neuronal mitochondrial dysfunction is necessary for seizure generation in mitochondrial epilepsy. The collaboration that we have built with Professor Waagepetersen aims to characterize in depth the metabolic impairment that would arise from these combination of pharmacological cocktails in both cellular compartments. We make use of highly sensitive analytical biochemistry techniques such as gas chromatography-mass spectrometry and reverse-phase high performance liquid chromatography coupled with incubation with <sup>13</sup>C labelled substrates that enabled us to track the metabolism of various substrates during the seizure state.

The knowledge I have acquired during my training stay in Copenhagen has been very invaluable in my personal and professional development. In the future, I would like to undertake a postdoctoral research project that incorporates biochemical techniques in neuroscience research. Having undergone this placement in Copenhagen has exposed me to cutting-edge analytical biochemistry techniques that I wouldn't otherwise have been able to learn in my home institution. Furthermore, spending time with Professor Waagepetersen's research group has allowed me to gain insight into how different a research environment and culture can be in a different country.

Professor Waagepetersen is an excellent neuroscientist who clearly has commendable authority in her field. Just from spending a few months with her, it's clear how unique her approach at team management is. She treats everyone in her research group as part of her scientific family, one that is built on mutual respect and trust. Moreover, she also exhibit very good project management and organisation in managing her team towards a group progress as well as individual development. I highly admire and appreciate the time I have been able to spend learning from her on team and project management, skills invaluable to me for my future research career.

Since returning to my home institution, I have brought with me a fresh approach towards neuroscience research, incorporating all the new knowledge that I have learned in Copenhagen. It is without a doubt that my newfound knowledge is invaluable for my home institution and we would certainly look into incorporating more of these approaches and techniques in future project.

All in all, I feel very blessed to be able to secure this NENS training grant, without which I would not have been able to earn this invaluable experience for my personal and professional development.

