

# NENS stipend report

Home institution: Center for Neurogenomics and Cognitive Research; VU University Amsterdam.

Host institution: Department of Physiology, Anatomy and Genetics; University of Oxford

Supervisor: Dr. Brent Ryan

Master student: Dana Vergoossen

Period: January till July 2015

I was privileged to be granted the NENS stipend to help fund my training stay in the Wade-Martins group at the Department of Physiology, Anatomy and Genetics, University of Oxford. During my stay, I worked on a project aiming to investigate the interaction between the lysosomal enzyme glucocerebrosidase-1 (GBA) and Parkinson's disease-related processes.

To be able to investigate this thoroughly I learned a range of molecular and cellular techniques that were available in this lab. I learned to prepare and check the integrity of several reporter plasmids that can be used to assay cellular phenotypes. To be able to study GBA, I learned to assay its activity with the fluorogenic substrate 4-methylumbelliferyl  $\beta$ -D-glucopyranosidase and measure protein levels using Western blot. To investigate how cellular processes affect the functioning of this enzyme I learned to manipulate cellular processes in different ways in culture using a neuron-like model.

Furthermore, I learned how to manipulate enzymatic activity to specific levels in culture using chemical inhibition. To be able to assess how this manipulation affects cellular functioning I learned how to optimize and measure cellular phenotypes. For example, I learned to measure ER stress using a plasmid with a luciferase reporter construct, but also with endogenous markers. Furthermore, I optimized the use of a fluorescence reporter dye and learned how to image and quantify fluorescence using a modern epifluorescence microscopy system. During my time in the lab I learned how to implement, validate and trouble-shoot a broad range of techniques, of both biochemical and cellular nature. These skills will greatly aid me in my future career.

Besides having gained valuable experience in a fully equipped molecular biology laboratory, I also developed my presentation, communication and critical thinking skills by attending and presenting in weekly lab meetings and drafting a manuscript in publication-style. I had the privilege of working alongside and learning from great researchers and was able to attend stimulating lectures and research meetings where important figures in the field talked about their work. Living and working in the stimulating city of Oxford has had a great positive impact on me personally and as a developing young scientist.

Sincerely,

Dana Vergoossen