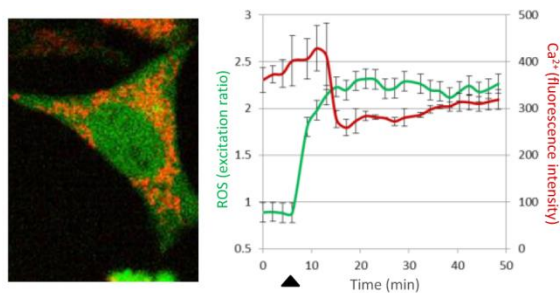


20th January 2014

## Report for funding from the Parkinson's Research Fund for 2012-13

The major symptoms of Parkinson's disease are linked with the death of the neurons in the substantia nigra region of the brain; however the reasons behind this are unclear. The neurons in the substantia nigra are special as they rely on an unusual type of calcium channel to maintain their normal, healthy function. This project aimed to develop the methods necessary to unravel the role of calcium handling in relation to Parkinson's disease.

Funding was received to enable us to visualise single cells on the microscope whilst simultaneously exposing them to metals and other treatments. We developed a panel of reporters that can be used to measure calcium levels in different cellular compartments. In particular we are looking at the effects of chemical treatments on the levels of calcium in the cells (an example is shown in figure 1). The chemical treatments can induce stress conditions in the cell similar to those that can cause neurons die.



**Figure 1. Selected examples of fluorescent based reporters of Ca<sup>2+</sup> and ROS.** Dual imaging of Ca<sup>2+</sup> (mitochondrial, red) and ROS (cytosol, green) in a single cell (**left**). Measurement of Ca<sup>2+</sup> (red) and ROS (green) levels in the same single cell type after treatment with H<sub>2</sub>O<sub>2</sub> (arrow) (**right**).

The money was used to purchase the necessary microscope accessories for this work. Unexpected microscope maintenance (laser replacement) slowed progress and so a proportion of the funding has been transferred to 2014. The results obtained have been used in a successful application to fund a PhD scholarship and this student will start her 3 year PhD on the 3<sup>rd</sup> of February 2014. This will enable the work to continue and we plan to publish in 2014.

The funds from the Norwegian Parkinson's Association greatly facilitated this project and the results will add to our understanding of the role that calcium plays in neuronal cell death.

Dr Jodi Maple-Grødem

Responsible project leader

Associate Professor, University of Stavanger

Group member, Stavanger University Hospital

[Jodi.maple@uis.no](mailto:Jodi.maple@uis.no)