2016 YCCSA SUMMER SCHOLARSHIP PROJECT SUBMISSION

This form is for prospective project supervisors to submit their projects to be included in the YCCSA Summer Scholarships Programme for 2017.

It is the purpose of the YCCSA Summer School that any projects submitted are novel and interdisciplinary in nature.

Date	*5 Dec 2016*
Supervisors' Names and Departments / Affiliation and Contact Email	*C. J. H. Elliott & L. Wilson* *Biology & Physics* *cje2@york.ac.uk & laurence.wilson@york.ac.uk*
Project Title	*Understanding movement disorders in Parkinson's*
Project Description	*People with Parkinson's disease (PD) typically have mobility problems – slowed movement (bradykinesia) and tremor. We have found similar effects in in the proboscis extension response (PER) of flies that have been genetically engineered to mimic Parkinson's (http://www.ncbi.nlm.nih.gov/pmc/?term=4655444). Normally the proboscis extension response is elicited by presenting a drop of sugar solution to the fly, and we have successfully recorded the resulting extension using a high speed camera. However, the films could only be digitised manually as the movement of head and legs was very random. A second problem is to know exactly when the droplet makes contact with the leg/proboscis. Both these issues can be addressed using optogenetics: replacing the sugar stimulus with a flash of light. The first part of the project will be to record the PER of control and PD-mimic flies, while the second part will be to digitise the data and look for slowed movement with increased tremor. If time permits, we will also feed flies with novel drugs that rescue the PD phenotype.*
Required Skills	*A willingness to work with flies, but no previous experience of biology needed. Experience of C, python or Matlab approaches to image processing appreciated.*
Supervision and Collaboration Arrangements	*CJHE will generate the PD-mimic fly crosses and supervise fly preparation. LW will direct image analysis.*
Project Dates	*The summer school runs for 9 weeks, starting on Monday, 10 July 2017 and finishing on Friday, 8 September 2017.*
Other Information	*Anything that doesn't easily fit above.*
References	*Smith, S.L., Lones, M., Bedder, M. Alty, J.A., Cosgrove, J., Maguire, R.J. & Pownall, M.E., Ivanoiu, D., Lyle, C., Cording, A. & Elliott, C.J.H., (2015) Computational models for understanding the diagnosis and treatment of Parkinsons disease. IET Systems Biology http://www.ncbi.nlm.nih.gov/pmc/?term=4655444*

When complete, please email the form to sarah.christmas@york.ac.uk