2015 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 2015.

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

Date	*5 Jan 2015*
Main Supervisor's Name	*C. J. H. Elliott*
Main Supervisor's Department	*Biology*
Co-supervisors' name(s) and Departments	*S. L Smith – Electronics* *L. Wilson - Physics*
Project Title	*Monitoring bradykinesia in a fly model of PD*
Project Description	*Please aim for around 2 paragraphs. Remember that this must be pitched at prospective project scholarship students.* *Parkinson's disease (PD) is associated with the loss of dopaminergic neurons and resulting disruption of movement. Following the discovery that some forms of PD are caused by inherited mutations, a number of fly models have been created by manipulating the relevant gene in flies. Several of these show deficits in locomotion, but in most cases the detailed changes in movement have not been quantified.* *The aim of this project is to use novel biologically-inspired computer algorithms to analyse movement of flies from video recordings. Last year, a YCCSA student found that the proboscis extension response seemed to be affected in the LRRK2-G2019S model of PD. We will use high speed video recording to measure a range of flies expressing related mutations and feed the flies with drugs used in PD and lead compounds under development as novel therapies.*
Required skills	*A short synopsis of the necessary skills for the summer student. Please be careful to specify the skills rather than requiring students to have followed a particular degree programme.* *Students should enjoy working on a small scale – flies are very small!* *Experience of the C programming language and MATLAB are required.*
Project dates	*To create a cohort of students who can work and learn together, ideally all projects would run for 9 weeks, starting on Monday, 13 July 2015 and finishing on Friday, 11 September 2015. If you have any special requirements regarding the dates of your project, please indicate these here.* *these dates are fine*

Other information	*Anything that doesn't easily fit above.*
References	Please include at least one relevant journal reference. Vincent, A., Briggs, L., Chatwin, G.F.J., Emery, E., Tomlins, R., Oswald, M., Middleton, C.A., Evans, G.J.O., Sweeney, S.T., Sparrow, J.C. and Elliott, C.J.H. (2012) parkin induced defects in neurophysiology and locomotion are generated by metabolic dysfunction and not oxidative stress. Hum. Mol. Gen. 21: 1760-1769, Abstract & Free Full text Alty, J.E., Jamieson, S., Lones, M.A., & Smith, S.L. (2012) How slow is too slow? Objective measurement of bradykinesia in Parkinson's disease using novel non-invasive devices. Proc. Int. Congress on Parkinson's Disease and Movement Disorders, 27, suppl. 1, S91-S92 Link Wilson, L.G., Carter, L.M., Reece, S.E. (2013) High-speed holographic microscopy of malaria parasites reveals ambidextrous flagellar waveforms. Proc. Natl. Acad. Sci USA. 110: 18769-18774 (Abstract and Free Full text).

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