Tuesday, November 27, 2018

Pedagogy Travel Grant Application Form

This grant supports faculty travel to **teaching-related** conferences and workshops. Attendance at disciplinary conferences can be funded, as long as there is a clear pedagogical reason for attending. Proposals focused solely on course content development are typically not funded. Applications are due **on the first of the month**.

Name

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Amount requested ($750 max)

$750.00

Conference or workshop you wish to attend.

Crawfly Classroom of Excellence

Description of the workshop or conference and what you hope to get out of it.

This January I plan to attend the AD Instruments Classroom of Excellence Crawfly Workshop at Cornell University. Three years ago I attended the "Crawdad" workshop and since then I have been working to build an electrophysiology component for our Neuroscience program. This winter the workshop is focused on "Crawfly", the use of optogenetics in the fruit fly Drosophila. Optogenetics is a cutting-edge tool in the field of neuroscience that allows neuroscientists to stimulate and record from neurons that have been genetically engineered to express light-sensitive ion channels. We do not yet have this technology or expertise available to students and faculty at Stonehill, but I strongly believe this system will transform our curriculum by giving students the power to design their own experiments. By participating in this workshop I will gain experience in Drosophila optogenetics and I will learn how I can bring this inexpensive and accessible model system to Stonehill. After completing this workshop I plan to design Crawfly lab modules for our neuroscience courses and to design additional electives that utilize this technology.

Although our neuroscience students learn about the physiology of neurons and neuron networks in courses such as Brain and Behavior, Research Methods in Neuroscience, and the Neuroscience Capstone, an integral component of the learning process is missing when students do not have hands-on experience with neuroscience techniques. What our students really need is to see for themselves how neurons function in real time, and to be able to formulate and test their own hypotheses.

Since I joined the neuroscience program in 2010, we have improved the curriculum by adding some hands-on experiences. These changes include cell culture, behavioral studies, brain dissections, and electroencephalography (EEG). We continue to make improvements such that the range of techniques is more comprehensive. For example, I plan to propose a sensory and motor neurobiology course for neuroscience majors that is based on the Chemistry "Clab" format. This lab-based course would take advantage of my own expertise (e.g. extracellular nerve recordings and pharmacological treatments) and the new ideas generated from this workshop. After participating in this workshop I will spearhead new research opportunities for our undergraduates. And as with

Crawdad before, this experience will also allow me to forge connections with faculty from other schools who are also committed to innovative pedagogical strategies.

Discuss the benefit to the Stonehill community

With continued interest in neuroscience at Stonehill, we must find new ways to get our students involved in basic neuroscience research. Some of our best students apply to SURE, but we need the research to be available in the classroom and year round. A major advantage of bringing neurophysiology research to Stonehill is that a large amount of data can be collected even in one experiment. By using accessible model organisms such as crawdad, earthworm, cricket, and Drosophila, I can employ a cost-efficient way to do research with undergraduates who have little to no experience. In conclusion, my participation in this workshop will not only help me design activities that allow our students to better understand neuroscience concepts, but it will expand the horizon of research opportunities available to our students for the continued success of the program.

How will you share your project findings or outcomes with the Stonehill community?

I plan to share my knowledge and expertise gained from this workshop with my colleagues who wish to incorporate neurophysiology modules into their classrooms and labs. For example, our external reviewers highlighted the need for our Brain and Behavior course to have a lab component. One way to achieve this is that I can teach these new techniques to my colleagues in a workshop format. Alternatively, I can offer guidance on modifying existing modules to better suit the interests, needs, and expertise of each instructor.

Please detail your budget.

$750 in travel grant funds will be used to cover the cost of hotel accommodations for the three-day workshop and to cover the cost of driving to Ithaca, NY.