

## **Baldwin Wallace University (BW) – Neuroscience Program of the Year**

The BW Neuroscience Program began as a minor in 1993 and we instituted a Neuroscience Major in 2000. Neuroscience students graduate with 2 majors (Neuroscience and Biology, Chemistry, or Psychology). With over 70 students, Neuroscience is now the fastest growing major at the University. Our curriculum is research-intensive and all students are required to produce an empirically based senior thesis.

### ***Case Report for Innovation***

It is widely accepted that teaching a skill to someone, enhances the teacher's skill as well. Yet, peer mentoring in higher education is often relegated to assisting student adjustment to College or academic tutoring - not usually to enhance research skills. As neuroscience undergoes growth worldwide, undergraduates are seeking laboratory experiences in which they become full partners with their peers and faculty in the design, conduct, and documentation of experiments that are publication worthy. We have *intentionally* developed a **3-step peer mentoring system** that encourages our students to collaborate and learn from, not only faculty, but each other.

*Peer Mentoring and the curriculum.* As an example, in our *Physiological Psychology* course students work in small teams to review the literature and design their own empirical studies. In 12 weeks they develop procedures, write a proposal for our IACUC or HSRB, conduct the studies and present the results at a campus-wide poster session. This class project requires students to be creative, write clearly, quickly develop new lab skills, and defend their work. These challenges are met through peer-to-peer teamwork but are also met through peer mentoring provided by more-senior students who have completed the course and serve as lab assistants. Students are also paired with senior neuroscience majors who have developed particular lab skills and may be called upon to act as supplementary mentors.

*Peer Mentoring and work in faculty labs.* Undergraduates, often ill-equipped with research skills, are likely to become involved in research labs where other students are also working with faculty. Students at BW frequently start laboratory internships as freshmen or sophomores and enter a faculty and peer mentoring system where they are trained in a structured, progressive manner. Students are given a handbook that lists all the techniques employed in a lab and then begin training. They first observe the particular task they wish to learn. Once they have watched this skill for the first time, they have a faculty member, the Lab Manager, or a peer mentor verify this by signing on the '*observation*' line of a checklist. Students next *perform* the skill under supervision, and finally are *tested* on the skill. Once this process is complete, students are then qualified to perform this particular task on their own. We have found that this method of initial observation, training and testing has been *instrumental in maintaining quality control* in the laboratory. Students begin with learning basic laboratory tasks and may eventually achieve the status of "Senior Laboratory Associate" (SLA) or Project Manager (PM). SLAs and PMs have the authority to train other less-experienced students. *They are the peers that less-experienced students turn to* for advice. As such, they are a critical part of the lab management team. The system we use here provides a structured, but encouraging, peer-mentoring community in which talented undergraduate neuroscientists can develop and mature.

*Peer Mentoring and Senior Theses.* Undergraduate students in our Neuroscience Clubs manage a “pairing program” where Neuroscience students working on their senior theses are paired with more-junior undergraduates. The students performing their senior thesis research benefit from having an extra set of hands and the mentored younger students learn new lab skills – techniques that will be used later as they perform their own thesis research.

### ***Demonstrated success of the innovation***

We have tracked the success of our peer mentoring programs via anonymous surveys of our current students and those in their post-undergraduate careers. When over 150 of our students working in laboratories that used our peer mentoring model were asked to rate their experience all “strongly agreed” with the statement that “supervision/training was appropriate and of high quality.” 100% of our peer mentors “agreed” or “strongly agreed” with statements indicating that their “peer mentorship was excellent”, “helped them gain confidence” and “allowed them to be more successful in their research”. Our student’s acceptance rate in graduate, medical, dental, and veterinary schools stands close to 100%.

### ***Replicability of the innovation***

We published our peer mentoring model in the *Journal of Undergraduate Neuroscience Education* (JUNE: Mickley et al., 2003; <http://www.funjournal.org/previous-issues/2003-vol-1-issue-2> ) and made two presentations at national *Council on Undergraduate Research* (CUR) conferences (2008; 2010). Formal feedback from attendees at these conferences indicates that the model is replicable in a variety of laboratory settings and sizes.

### ***Overall contribution to neuroscience education in the institution, community and the field***

Institution: Neuroscience peer mentors are recognized as enthusiastic ambassadors that are used by our undergraduate research office to go into classrooms to inform students about research opportunities on the BW campus. As a result, student recruitment and interest in science is booming and graduation rates are near 100% in these peer mentors.

Community: These students are active in community outreach events such as Brain Awareness Week activities. For example, during the last academic year, high school students were invited into our labs where they learned basic neuroscience techniques such as neurohistology from our peer mentors. Neuroscience student mentors taught elementary school children about autism and educated them about the basic mechanisms of sensation.

The field of neuroscience: For almost 20 years, our students have contributed directly to the field of neuroscience through their paper and poster presentations at the SfN and FUN meetings as well as at international venues (e.g., IBNS). Our student peer mentors work with faculty to produce papers that frequently appear in peer-reviewed journals and books.

In summary, BW’s novel and intentional peer mentoring system enhances our students’ success in graduate programs, careers, and life. We intend to present information about our peer mentoring system via Teaching/History of neuroscience posters and symposia at the 2013 SfN meeting.