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First New York City Regional Association of Biology Laboratory Education (RABLE) Workshop

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The First New York City Regional Association of Biology Laboratory Education (RABLE) was held at St. Francis College, Brooklyn, NY. Participants included eight professors with affiliations with and/or faculty appointments from St. Francis College, the Borough of Manhattan Community College, Barnard College, St. Peter's University, Nyack College, the City College of New York, and Tuoro College, Brooklyn College, New York University and the American Museum of Natural History and 45 undergraduates from St. Francis College. Dr. Steven Lipson was the inspiration for the event, as he had received a St. Francis College Faculty Development Grant to fund a hands-on workshop he developed on teaching cell culture and cytotoxicity. Sarah Salm from the Borough of Manhattan Community College and Jessica Goldstein from Barnard College were recruited to help host a RABLE pending permission from the ABLE Board (which was granted). Participants could choose from an all-day cell culture/toxicity workshop, or from up to four mini-workshops from seven that were presented (one was repeated). A novelty of this RABLE was the substantial involvement of students, both in terms of presenting as well as participating in workshops.

Keywords: RABLE, conference organization, student participation

Link to Original Poster: http://www.ableweb.org/volumes/vol-34/poster?art=63
Link to Supplemental Materials: http://www.ableweb.org/volumes/vol-34/nolan/supplement1.pdf

Introduction

Kathleen Nolan has been a long-time ABLE member and is also a member and Vice President of the Metropolitan Association of College and University Biologists (MACUB). Over the years she has helped to organize many one-day MACUB annual conferences and mini-workshops or events. MACUB hosts a one-day conference that has the format of breakfast, one or two key-note speakers, poster and vendor sessions, lunch, and lab workshops and talks in the afternoon. Nolan has presented three lab education workshops at these conferences, so, between the ABLE and MACUB conferences (and other conferences she has organized—including environmental, mentoring, and career conferences), has become familiar with the timing and format involved. Dr. Steven Lipson of SFC had received a $2000 faculty development grant to host a cell culture workshop at St. Francis in the spring semester of 2012. He made the announcement for this workshop in November at the SFC environmental conference, and later Nolan asked him if he could dovetail it with a possible RABLE. His cell culture and toxicity workshop leant itself handily to a RABLE, because he felt it would be difficult to pack up all the materials and travel to a national workshop if it was any distance away.

Nolan contacted Jessica Goldstein and Sarah Salm to see if they would like to present a cell diffusion workshop at a possible RABLE, pending board approval. Keeping in mind that SFC has three teaching laboratories (and one would be taken up for Lipson's all-day cytotoxicity workshop) Nolan then put together an outline for a one-day RABLE that consisted of several workshops---four in the morning and three in the afternoon (one P.M. workshop would be repeated). Two hour-and-a-half lab workshops at a time would be run simultaneously so there would be choice involved. Thus, each participant would be able to choose the all-day cell culture toxicity workshop, or the equivalent of two ABLE minis in the morning and two in the afternoon.

Breakfast and lunch were provided (bagels for breakfast and pizza for lunch). At lunch, participated moved to a separate classroom and learned about ABLE through a presentation, and viewed an educational CD from Biol-o-gee that has animations of body systems set to RAP lyrics (developed by Janet MacDonald).

Professional Participants and Affiliations

- Steven Lipson, St. Francis College; New York University
- Kathleen Nolan, St. Francis College, American Museum of Natural History
- Marlon Joseph, St. Francis College
- Alex Braun, St. Francis College; Tuoro College, The City College of New York
- Anastasia Czyz, St. Francis College; Brooklyn College
- Jessica Goldstein, Barnard College
- Sarah Salm, Borough of Manhattan Community College
- Jill Callahan, St. Peters College
- Peter Park, Nyack College

Choice of mini-workshops

The following mini-workshops were presented; two of the workshops were completely student-lead. *The Cell Diffusion Workshop* was based on a successful workshop given by Goldstein and Salm at the 2011 national ABLE (Salm et al., 2012). This involved making cubes of agar of various sizes, placing these cubes in a dye, and measuring the diffusion rate.

The student-led *Herbivory Workshop* was originally presented by Nolan at the University of Delaware in 2009 (Glover et al., 2010). This workshop consisted of taking pictures of leaves in which herbivory is evident. The pictures are then downloaded into a computer and analyzed with Image J, a free downloadable software available from the National Institute of Health website to calculate herbivory as a percentage of total area.

Alex Braun gave a workshop on *Fruit Fly Larvae Food Preferences* that he had refined with students. Nolan originally developed this idea in the hopes of conducting selection experiments for speed in fruit flies and presented this mini-workshop at New Mexico State University in 2011 (Nolan et al., 2012).

Several students had assisted in developing a *Horseshoe Crab Larvae Workshop*, by recording the effects of various salinities on body contractions which was subsequently presented at the 2012 national ABLE (Faizi et al., 2013).

Marlon Joseph, with the assistance of students, ran a workshop in which Vernier carbon dioxide sensors were used to detect CO_2 *Production by Yeast in Various Fruit Juices*.

Another workshop was based on a poster presented at the 2011 national ABLE on *Cichlid Behavior* (Foo et al. 2012). In this lab, students divide a 100-gallon tank vertically in thirds with tape strips and observe and record territoriality. This was based on an ABLE workshop given by John Glase (Glase et al., 1992).

The final workshop was *Using Biopac To Determine EKG*. This was lead by Braun and Callahan, who have used Biopac in their teaching before. Biopac had also been demonstrated previously at a MACUB conference.

Other workshops presented were Dr. Lipson's cell culture and cytotoxicity workshop and Sarah and Jessica's Cell Diffusion Mini-workshop (tested at the 2011 national RABLE). The day really could not have gone more smoothly. Everyone enjoyed a breakfast of New York bagels and pizza for lunch. We also spoke about ABLE and showed DVD of Biol-O-Gee animations, developed by Janet MacDonald.

Summary

Even though the overall number of local professors who participated was small (8 faculty: 45 students), there was much energy and enthusiasm present. Peter Parks, a new assistant professor from Nyack College, became enthused abot ABLE and ultimately presented a mini-workshop on using computer programs to determine fish shape and to use principal component analysis to determine if there is a correlation between fish shape and habitat at the 2012 ABLE Annual Conference held in June at University of North Carolina –Chapel Hill. This has lead to Parks and Nolan staying in touch and continuing to collaborate on projects. The lab workshop that presented Vernier equipment that uses CO2 probes to interface with the environment could be presented at a future ABLE workshop. (Bill Glider presented a Vernier-based photosynthesis workshop in the 2012 national ABLE (Glider 2013).) Lipson noted that a RABLE could be used to teach local education professionals lab techniques

that would be difficult to reproduce at another institution, such as cell culture techniques. A colleague recently asked me, (he teaches on Saturdays so he was unable to attend the RABLE) for the fruit fly larvae write-up. And, of course, it was fun to have 3 long-time ABLE members from 3 different institutions together in the same room! (And now Parks has joined our ranks.)

The positive atmosphere created by the students added to the program. The student presenters felt empowered, responsible, and independent upon presenting their workshops. The student attendees enjoyed being taught by their peers as well as professors. This program broke down walls between the professors and the students. One of the reasons may have been because our mostly commuter students do not always get chances for intellectual interactions outside of the classroom—this program facilitated this. Student involvement could become an important RABLE component, and could become a valuable tool to recruit future professors/teachers. At St. Francis College (as at so many other colleges) the sole reason most students give for majoring in biology is, "I want to become a medical doctor." These students do not realize that they might be able to attain much satisfaction from teaching.

We would definitely like to try hosting this conference again. It would be important for us to work on recruitment to increase participation of local professors. We would like to work more cooperatively with the Metropolitan Association of College and University Biologists (MACUB), and perhaps recruit them as co-sponsors of a future event. With an increase in publicity for ABLE due to this RABLE, we hope to be able to see more new members recruited from the New York area in the near future!

Notes for the Instructor

We highly suggest conducting such a RABLE at your institution, as it is a relatively easy thing to do, considering it is for one day only. As the SFC lab curriculum has a substantial laboratory research project focus for our freshman general biology students, we are usually able to recruit a few students into an independent research program conducted with professors each year. These students are funded as either work-study students (3/4 federally funded) or as student assistants. Besides a monetary incentive, students also present a poster on their research each fall at the annual MACUB conference and at a symposium at SFC titled, "Fall Back into Summer". Honors students have an additional incentive in that they have the opportunity to attend the annual Northeast Regional Collegiate Honors Council conference where they present talks and posters.

Thus the SFC students were motivated to assist in presenting the NYC RABLE workshops, and since these labs sometimes stem from their research, are able to present the workshops sometimes unaided by a faculty member. The use of students can expand the number of workshop offerings. Students can also boost attendance (we offer them extra credit); in our case we did have only 8 instructors present, and most were giving workshops. The total costs for the workshop: other than for student help, costs were approximately $500 for breakfast and pizza for 50 participants. The lab supplies were really negligible, as they constituted general supplies or those that remained from previously taught labs.

Literature Cited

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Appendix A

Flyer

Regional Association of Biology Laboratory Education Conference (RABLE)
St. Francis College, 180 Remsen St., Brooklyn, NY 11201
Saturday, February 25, 2012
8:30 A.M. to -4:30 P.M.

Learn about cell culture, computer software that can enhance laboratories, and interesting cell diffusion simulations and animal behavior experiments! Listen to Biol-o-gee, a new RAP digital resource for teaching. Find out about local and marine biology field courses and about the Association for Biology Laboratory Education annual conferences! Enjoy networking with colleagues and friends over breakfast, lab exercises and pizza! And, it's all **FREE!!**

To register, please e-mail **knolan@sfc.edu** and state **WHICH** lab workshops you are interested in.

Time	Activity	Location
8:30- 9 AM	Breakfast	Callahan Center
9 AM - 12 Noon	Cell Culture and Cytotoxicity I-Steven Lipson SPACE LIMITED TO 12 PARTICIPANTS	Rm 5210
9 -10:30	Cell diffusion simulation— Jessica Goldstein and Sarah Salm	Rm 5201
b9 - 10:30	Fruit fly larvae food preference—Alex Braun	Rm 5213
10:30 - 12 Noon	Using Image J to Collect Herbivory Data— Lauren Clark and Alina Zhyvotovaka	Rm 5213
10:30 - 12 Noon	What is the effect of varying salinity on horseshoe crab larvae and estuarine shrimp? — James Foo and Mamuna Faizi	Rm 5201
12 Noon - 1:30 PM	Lunch—pizza (outside theater) Introduction to ABLE— Jessica Goldstein, Sarah Salm and Kathleen Nolan Viewing of Biol-O-Gee DVD— Janet MacDonald Experiential field education in NYC and the Caribbean— Kathleen Nolan	7th floor Theater
1:30 - 4:30 PM	Cell Culture and Cytotoxicity II—Steven Lipson SPACE LIMITED TO SAME 12 PARTICIPANTS AS ABOVE	Rm 5210
1:30 - 3 PM	Designing Experiments with the use of Vernier software Marlon Joseph and Michelle Batchu	Rm 5201
1:30 - 3 PM	Designing Experiments with the use of Biopac software Alex Braun and Jill Callahan	Rm 5213
3 PM - 4:30 PM	Designing Experiments with the use of Vernier software Marlon Joseph and Michelle Batchu	Rm 5213
3 PM - 4:30 PM	Utilizing a Community Tank for Cichlid Behavior Studies Francine Foo	Rm 5201

Mission, Review Process & Disclaimer

The Association for Biology Laboratory Education (ABLE) was founded in 1979 to promote information exchange among university and college educators actively concerned with teaching biology in a laboratory setting. The focus of ABLE is to improve the undergraduate biology laboratory experience by promoting the development and dissemination of interesting, innovative, and reliable laboratory exercises. For more information about ABLE, please visit **http://www.ableweb.org/.**

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