

Report

**The 2nd Annual Undergraduate Research Symposium in
Biology at the University of Puerto Rico, Mayagüez**

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Report

The second annual undergraduate research symposium (URS) in Biology took place on Saturday, May 5, 2012. The URS was designed to meet six **objectives**:

1. Share knowledge gained through research
2. Motivate student investigators to complete their projects
3. Practice communication skills in front of a supportive audience
4. Improve curriculum vitae with a high-impact activity
5. Award excellence
6. Contribute to a vibrant intellectual community

The symposium ran from 8 a.m. until 6 p.m. in the Biology building at the University of Puerto Rico, Mayagüez (UPRM). At the core of the program were nine sessions of **oral presentations**. Sessions were separated by topic, with three sessions running concurrently over three periods. Sixty-two students gave oral reports on their undergraduate research in biology, representing a 12.7% increase in participation over last year's event. In addition to UPRM Biology students, presenters included UPRM students from Industrial Microbiology, Agricultural Sciences, Industrial Biotechnology, and Computer Engineering, as well as several students from UPR Ponce. Student presentations were twelve minutes long with three minutes at the end for questions from the audience. Prior to the day of the event, students had submitted abstracts and titles, and affirmed that they had obtained their advisors' permission to present. In keeping with the bilingual culture of Puerto Rico, talks could be delivered in either English or Spanish. We estimate that ~75% of talks were in English.

Sessions were moderated by 16 graduate student **volunteers**, representing both UPRM (n = 12) and UPR Ponce (n = 4). The moderators introduced speakers and maintained a strict schedule. Because of their diligence, all of the talks began and ended on time, allowing audience members to move between sessions without interrupting the students' presentations. Six undergraduate members of UPRM biology clubs volunteered their time to staff the welcome table. In addition, 14 faculty members volunteered as judges and coordinators. Two faculty judges provided written commentary to students and selected an outstanding talk for formal recognition from each session.

In addition to the student talks, the symposium included a host of **complementary events**, beginning with a commencement in which the director of the Biology department and the chair of the symposium committee greeted guests. Immediately following the commencement, Dr. Dwayne Elias (Oakridge National Laboratory) delivered the first of two 30 minute plenary talks. He discussed both his work on climate change and ecosystems ecology and opportunities for students at national laboratories such as Oakridge. His fascinating talk stimulated many questions from the audience. The next events were the morning coffee break and the morning student talks. Lunch, catered by Café Rullan, consisted of freshly prepared Puerto Rican cuisine, including roast chicken, rice and beans, and flan. There was ample food left over. After lunch, Dr. Elvia Melendez-Ackerman (UPR Rio Piedras) delivered the second plenary talk. She spoke in Spanish about her work in Plant Ecology, and about her path as a Latina in academics. Her talk stimulated substantial discussion and positive commentary. Following more student

talks and an afternoon coffee break, everyone reconvened in the auditorium for the award presentations and closing remarks. Award certificates were presented to the outstanding speakers from each of the nine sessions, and a group photograph was taken. All speakers and volunteers received certificates of participation.

The committee conducted myriad **preparatory activities** in the weeks leading up to the event. The six committee members met nine times during the semester to organize the event. Advertisements went out through several rounds of emails to biology students and professors and to directors of other department and administrators. The committee also advertised through the department's Facebook page, posters, computer backgrounds in all Biology classrooms, large hanging banners, on the departmental website, and to professors at department meetings. Once students registered by submitting abstracts through a custom website, they were added to a special email list to facilitate communication. Two special information sessions guided students through the process of developing their presentations.

Beginning one month before the symposium, the symposium committee organized a "**Distinguished Speakers Series**" in which diverse scientists were brought in to speak, and meet with students and professors. The Distinguished Speakers Series, which was underwritten by a grant from the Howard Hughes Medical Institute (HHMI), promoted and hosted talks by Dr. Esteban Fernandez Juricic (Behavioral Ecology, Purdue University), Dr. Saara Dewalt (Plant Ecology, Clemson University), Dr. Antonio Ventosa (Extremophiles, Universidad de Sevilla), and Dr. George Benz (Parasitology, Middle Tennessee State University). Each of these talks attracted large audiences of students and faculty (average = 104 guests). In addition to giving talks, the speakers had pizza lunches with biology graduate students, met individually with professors and students, and attended after-hours receptions that were open to faculty and graduate students.

We estimate that the final **budget** for the Distinguished Speakers Series and the Undergraduate Research Symposium was \$37,360. Major budget items included faculty time to prepare the symposium, travel for speakers, administrative and janitorial support, and food. **In-kind support** from the Department of Biology totaled \$29,760, constituting 79.7% of the total budget.

The organizers initially sought **financial backing** for the event from the Puerto Rico Technology and Research Trust. Members of the planning committee met with high-level representatives of the Trust on December 9 and March 9, 2012. Committee members offered a report on the previous year's activity and a plan for the 2012 event including a cost-sharing plan and budget. The Trust approved of the plan and offered \$10,000 in support to organizers Logue and Rios on March 9, 2012. Subsequent to this meeting the organizers made repeated, but ultimately unsuccessful, attempts to confirm key details and acquire a contract from the Trust in a timely manner. The Trust, however, did not supply a final contract until May 1, at which time it was far too late to be of any use for the event. By that time, the director of the Biology Department, Nanette Diffoot, had stepped in to offer financial support for both the Distinguished Speaker Series and the Undergraduate Research Symposium. This support was based on a Howard Hughes Medical Institute (HHMI) grant to Diffoot and colleagues at UPRM. In-kind support and the HHMI monies funded the entirety of the event.

The symposium produced **measurable outcomes**, allowing assessment of performance relative with respect to the event's stated objectives. In addition to the 62 student presenters, the symposium welcomed 170 volunteers and guests. Attendees were encouraged to fill out and return two assessment forms: one for student presenters only (n = 44 respondents) and a general assessment for all attendees (n = 129). Responses, speak directly to the symposium's objectives (complete report attached). For example, 96% of student presenters agreed that participating strengthened their presentation skills, 80% learned new analytical techniques to prepare for their talk, and 98% read scientific literature as part of their preparation. The general assessment revealed that 98% of attendees learned about topics outside of their areas of expertise, 94% agreed that they had the opportunity to network with professors at the event, and 100% agreed that participating in the symposium was a positive experience. Written comments, and comments made directly to the organizers, were overwhelmingly positive. The UPRM press office covered the event, resulting in an online article, slide show, and video segment with interviews and event footage (<http://www.uprm.edu/portada/article.php?id=2222>).

Conclusions and outlook

It is the view of the Department of Biology that the Distinguished Speakers Series and the Undergraduate Research Symposium provide outstanding value to the UPRM student body and to the broader community. Together, these events constitute a capstone to the academic year, providing motivation and acknowledgment to our students, and strengthening the intellectual community in Western Puerto Rico. The department plans to repeat these events on an annual basis. Securing adequate funding, however, was a major source of uncertainty this year. The department is therefore working to procure a recurrent source of funding for these events in the future.

Although the event was widely seen as successful, the department is interested in implementing some changes to help the symposium better achieve its goals. The department is open to gradually expanding to include more students, faculty, and administrators, including those from other departments and universities. In addition to the two faculty judges, next year's symposium will also include one advanced graduate students judging each session. This change will provide our graduate students with greater involvement in the event and give our undergraduates more feedback on their presentations.

Summary

- The 2nd annual Undergraduate Research Symposium in Biology took place on May 5 2012.
- The symposium committee designed the event to achieve six education objectives.
- Student presenters submitted abstracts online.

- Sixty-two students, representing five departments, gave oral presentations in either Spanish or English. All talks were about biological research at the undergraduate level.
- In addition to the presenters, 170 volunteers and guests attended the event
- Faculty judges provided feedback and awarded excellent talks from each session
- Other events included two plenary talks by invited speakers, commencement and closing addresses, an award presentation, two coffee breaks, and lunch.
- The event was advertised through a variety of online and physical media.
- Information sessions prior to the event provided guidance for student presenters
- The Symposium was preceded by a Distinguished Speakers series in which four outstanding scientists visited the department to offer talks and meet with students and faculty.
- Financial backing was provided by a Howard Hughes Medical Institute grant to Nanette Diffoot and colleagues and by in-kind contributions from UPRM and the Department of Biology.
- Participants and guests filled out over assessment questionnaires after the event, allowing the committee to compare outcomes to the goals of the event.
- 100% of respondents agreed that participation in the symposium was a positive experience.
- The Department intends to repeat both the Distinguished Speakers Series and the Undergraduate Research Symposium on an annual basis.
- A major goal for the future is obtaining reliable, recurrent funding.
- The events will benefit from controlled growth.

2012 Undergraduate Biology Symposium **Evaluation by Student Presenter (44 Students)**

Your anonymous participation in this short questionnaire helps the symposium planning committee measure the impact of the symposium. The data will help the department make important decisions about future activities.

Have you presented this research before? 14 Yes 30 NO

		I strongly agree	I agree	I disagree	I strongly disagree
1	Preparing to present at this symposium motivated me to make progress on my project.	28	13	2	1
2	Presenting at this symposium strengthened my oral presentation skills.	31	11	2	0
3	Presenting at this symposium helped me to better understand my area of research.	28	11	4	1
4	Presenting at this symposium will make it easier for me to prepare and present another scientific talk in the future. (1 contestación en blanco)	36	7	0	0
5	This experience has improved my confidence in my ability to speak in front of an audience.	29	14	1	0

		None	One	Two to four	Five or more
6	How many times did you meet with your advisor to prepare for this symposium?	2	12	18	12
7	How many scientific meetings have you <i>ATTENDED</i> before today?	10	3	20	11
8	How many scientific meetings have you <i>PRESENTED AT</i> before today?	20	3	11	10
9	How many times have you delivered an oral presentation before today?	3	2	18	21

		True	False
10	I learned new field or laboratory techniques in preparation for my presentation.	34	10
11	I learned new analytical techniques (e.g., statistics) in preparation for my presentation.	35	9
12	I learned new computer skills in preparation for my presentation.	28	16
13	I learned new scientific theory in preparation for my presentation.	41	3
14	I read scientific papers in preparation for my presentation.	43	1

Comments:

- Nice symposium. Please give the opportunity to non Biology students and promote more.
- Los moderadores de Ecología I no sabían pronunciar los nombres científicos.
- This has motivated me to keep working on my project and prepare a better presentation.

2012 Undergraduate Biology Symposium
Participant Evaluation

Your anonymous participation in this short questionnaire helps the symposium planning committee measure the impact of the symposium. The data will help the department make important decisions about future activities.

(129 Participants)

Please check all activities in which you participated today:

45 Presented my research work

89 Attended my peers' talks

66 Attended one or more of the keynote lectures from visiting scientists

(Blank 7)

		I strongly agree	I agree	I disagree	I strongly disagree	Blank	N/A
1	Today I learned about topics outside of my area of expertise.	98	27	1	2	0	0
2	Today I learned about topics in Biology that are not covered in my classes.	85	33	5	1	1	2
3	The symposium gave me an opportunity to network with other biology students.	62	57	7	1	1	2
4	The symposium gave me an opportunity to network with professors.	43	72	5	2	6	2
5	The symposium helped me identify other students who share my interests in Biological research.	67	46	6	3	5	2
6	The symposium will make it easier for me to prepare and present a scientific talk in the future.	93	26	3	2	1	4
7	Participating in the symposium has increased my interest in participating in research in the future.	89	27	7	1	1	4
8	Attending the keynote lectures was a positive experience.	84	31	1	0	9	4
9	Overall, participating in the symposium has been a positive experience.	106	18	0	0	3	1

Comments:

- Great organization and a eye opening experience due to the many interesting subjects presented.
- Second year participating. Great, better!! Love It!!
- Great job! Great presentations.
- Excellent opportunity. Thank you.
- I loved the experience. Not only did I learn new things but I was able to integrate things learned in class to other applications.

- Good!!
- Please add more divisions according to the projects. Like bioinformatics and biomedical engineering.
- Great meeting!!
- I am a computer engineering student. My knowledge of Biology is very limited and I have not taken any biology classes.
- Very good!!
- As civil engineer student it would be good to emphasize the students to make the presentation more understandable for other department. It was a great for my professional knowledge!!
- Excellent organization and presentation qualify. Great opportunities for undergrads learn/find different opportunities in research in or out of PR. Keep the good work! Congrats to the organizers responsible for such an excellent labor.
- I should be done at least once every semester every year. It is amazing everything you can learn in just one day.
- Excelente simposio y coordinación de horarios.
- The talks should no be limited to biology students other departments share similar interest and should be participants.
- Excellent!!!
- Great exposure to young researcher.
- The symposium in general, was really good and interesting. The themes were very diverse and interesting.
- More areas/divisions, such as bioinformatics or bio-engineering should be covered/added.
- Muy bueno. Muy interesante y educativo.
- It was great! But maybe more time control would improve the activity and made students to move from room to another without missing any part of the presentations.
- Moderadores mejores preparados (Sesión III Ecología)
- Organized