



Center for Innovation and Research  
in Graduate Education

# Astrobiology Student Focus Group Report

**Tami Blumenfield, Renate Sadrozinski & Maresi Nerad**

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## **Astrobiology Student Focus Group Report**

### **Introduction**

Two focus groups were held with Astrobiology graduate students. The focus groups were conducted by Tami Blumenfield, Research Assistant for the Center for Innovation and Research in Graduate Education (CIRGE); and Maresi Nerad, Director of CIRGE and Associate Dean of the Graduate School. The first focus group was held on May 17, 2007 for students in the first year of the Astrobiology program. The second focus group was held on May 25, 2007 for advanced students.

This report is divided into two sections: (I) feedback on components of the AB program, including coursework, research rotations, international collaborations, interdisciplinarity, teamwork, and interactions with faculty; and (II) student recommendations for the AB program.

### **Summary**

In general, students offered positive feedback about the structure of the Astrobiology Program. They especially like the workshops, the seminar series and speaker lunches, and the core courses. They would like more interaction with other students and among the faculty, and they would like more guidance on setting up their rotations.

## **I. Feedback on Components of the Astrobiology Program**

### **General Feedback on Astrobiology Certificate**

“Other programs label things they already do as astrobiology; this program tries to generate new things that can be labeled astrobiology.”

When asked what is working well about the program, students mentioned workshops, learning from other students, the seminar series, pizza lunches with seminar speakers, barbeques, the AB courses, and the research rotations. Students commented that the program brings together a diverse group of people and disciplinary interests; at the same time, faculty are attentive to the problem of different vocabulary and language in disciplines and push for definitions when needed. Students found that AB requirements are not excessive or time-consuming.

Students also appreciated financial support for attending conferences. One student explained, “Funding for conference travel is a huge plus; some of biggest progress is made in [personal] interaction between scientists.”

### **Courses**

Students offered the following feedback about the Astrobiology courses (501 and 502):

One student identified the 501 class as a highlight of the AB program. They appreciated that it was student-driven and covered what each student described as the important things in their field. The student said, “I’m never going to be able to do real research in biology, but as far as the focus I should have for my research in astronomy, what are important things – it’s great for that.”

This student also linked the course to greater ability to participate in conferences:

“The curriculum here is so focused on exposing you to all the important aspects of the particular fields; when you go to conferences - I may not understand all the details of a talk on geology or biology, but at least I can understand somewhat.”

Another student said, “I definitely appreciated the jargon part of the course.” One student appreciated that faculty served as ‘vocabulary watchdogs.’

Students suggested that the 502 course could be modified in order to unify its content, especially by having greater coordination among faculty presenters. They felt faculty were not aware of what other course presenters had said, and that ideally faculty would also attend the lectures of other faculty presenters. One student said the course was “just a series of lectures; no synthesis really.” Another student said, “Consider not splitting the 502 course into three separate blocks.”

Some first year students expressed concern about the timing of the core course, saying that it was difficult to follow AB conversations prior to the core course. They suggested shifting it to Autumn Quarter, having written references available to new students, or supplementing the seminars with a quick introduction to Astrobiology at the beginning of the program.

Finally, students were interested in seeing more AB courses offered.

### **Relationship with Home Department**

Students agreed that it was not very hard to balance AB requirements with home department requirements.

“Biology has a small number of graded courses required; AB requirements can fill that.”

“It’s added a year to my graduation time, exactly as I expected. Sometimes I get a lack of sympathy from my own department – why are you taking so long to finish? – but I’ve always had that internal calendar.”

“In a lot of ways I feel closer to the AB students than to the students in my own department. I can’t view my research in my own department as separate from my research in AB.”

### **Research Rotations**

Students valued the opportunity to work in other labs. One student expressed appreciation for this requirement, saying that from the beginning of the program, they read articles with the rotation in mind, thinking about possible projects. However, students indicated feeling pressed for time and needing more preparation for their rotations. Finally, students indicated that giving a talk as the exit requirement was a very worthwhile experience.

Students new to Astrobiology wanted more information on how to choose a lab. One student suggested quarterly emails with information about opportunities in labs. Another student expressed skepticism that anyone would want an ‘uneducated’ student to join their lab and pay for them to be in the lab. An advanced student stated that the AB program needs to think about how to get people prepared for their lab rotations: “I treated it as, I don’t know anything about different disciplines so I’ll just throw myself in and learn from there.”

A student who took advantage of the unstructured nature of the rotation requirement to work with a mentor outside the university said, “In retrospect I hadn’t quite realized the possibilities for the lab rotation; perhaps I should have done something different.”

Another student said, “The lab rotation has been hard to fit in... I meant to do that this quarter, but didn’t get to it.”

One student suggested that micro-rotations could complement the existing rotation requirement, and allow students to learn about more disciplines. The student advised that micro-rotations should not be bland introductions for huge groups on tour, but something more in depth: “Students could explain to each other what happens in their labs, and then [visitors would] be made assistant for the day, or for a few hours. That would also be a way to develop leadership skills.”

### **Interdisciplinarity**

Students were enthusiastic about the interdisciplinary potential of the Astrobiology program. One student said, “I’ve long been frustrated by the somewhat dogmatic and arbitrary delineations that exist in science, you know, where does geology begin and end, where does microbiology begin and end, and I feel like some of the greatest progress is yet to be made on the overlap between science. I think our program offers unique potential for that, both by the access to equipment and experience and the knowledge that it offers through the faculty.”

Students noticed a distinct difference between people in AB and those who aren’t. According to one, Astrobiology people are “more open to broad thinking and have a different way of approaching scientific problems.” They appreciated learning from other students and noted the importance of interaction among students in different disciplines. Workshops and classes were noted as good ways of getting people to interact.

### **Teamwork**

Teamwork is an area in which most PhD recipients are weak. One goal of the NSF IGERT program is to foster teamwork among doctoral students. The AB program provides no formal training in teamwork, but offers many opportunities for students to work together. Opportunities include teaching portions of the AB courses, extracurricular teaching opportunities like the Friday Harbor summer course, and collaborating with peers to form discussion groups.

Some students believe that the Astrobiology program self-selects for people that are interested in teamwork and collaboration. One student said, “This program is the future of science: learning a common language and getting past our own individual lexicon.”

When asked about team-building exercises, one student suggested that they would be helpful for both students and faculty. They brought up Outward Bound as a possible model.

Students liked the idea of teaching a course together as another way to foster teamwork skills.

### **Interaction with Faculty**

When asked about their expectations for the Astrobiology program, students agreed that they anticipated more interaction. Students thought that more faculty members would be more involved. One said, “I expected more faculty members to be actively interacting with AB, not

just linking their research peripherally to AB overall.” Beyond the core faculty, students noted a discrepancy between those listed on the roster and those who were actually involved with the AB program.

Students also mentioned that some departments seem less invested in AB and there is less ‘buzz’ about its events and programs. One student expressed disappointment that the chemistry department was not involved in the AB program.

### **International Collaboration**

Several students reported international experiences and several were planning international research trips. Their experiences ranged from attendance at summer school, to research residence at foreign universities, to international conference participation.

One student described an informal arrangement while in residence at a European university, receiving an office and being accepted by the program there. The student said, “There was no clear goal or expectation and I wish there had been. But, I wouldn’t change anything if I had it to do over again...It was a life-changing experience.” Another student commented that although the international experience was not always well organized, this was not problematic: “It was well organized in that it was poorly organized.”

Students enjoyed interacting with world-class scientists at a research center in Europe, although they did not appreciate that their presentations were recorded without asking.

Students identified conferences as key site of international collaboration. “Going to international conferences, you get a much different cross-section of research from what you get in the country; and also the international experience itself.” Conferences also offered opportunities to reconnect with colleagues met at foreign universities.

The international experiences had positive outcomes, generating “lasting contacts and potential future research collaborators.” Two students later co-authored papers with their international colleagues.

However, students did not report interacting with these international colleagues in Seattle. The AB program may wish to consider fostering these interactions in the future, through conferences or by hosting groups of international researchers.

## **II. Student recommendations for the AB program**

Students offered the following suggestions when asked what they would change or do differently.

### *1. Faculty participation*

Students were sensitive to demands on faculty time, and noted that certain faculty were overburdened with the administration of the AB program. However, they desired more cohesive faculty participation in the program.

“Rousing support among faculty would be good...Most interaction is with students. They presumably talk to their students about astrobiology, but there’s not a lot of interaction among the faculty about astrobiology. I think that could be improved. And I think that would make the program stronger.”

Students joked that faculty would benefit from team-building exercises or from having their own workshop.

## *2. Workshops*

Students were very enthusiastic about the workshops. One said, “The combination of a lecture setting and being able to go into the field that same day is really beneficial.” Others said that going away together is great for building a sense of community. Students also appreciated meeting faculty from outside the university.

New students participating in the Yellowstone workshop found it difficult to follow the discussions prior to taking AB coursework, but appreciated the social integration that the workshop provided.

One student suggested that offering more workshops, even if they are held in the Washington region to keep costs down, would benefit the program.

## *3. Upper-level astrobiology class for undergraduates.*

Students felt strongly that there should be a 400-level astrobiology course meant for undergraduate science majors and open to graduate students in other disciplines. They found the current format of a 100-level course open to all majors less than ideal. One student said, “There is nothing between a 100-level course and the 500-level grad courses; meanwhile, people in my department would like to learn more about astrobiology.” Another student agreed, saying that a senior-year capstone class, “catapulted me into AB.” The course could also provide more TA opportunities.

One student suggested that the new AB faculty member could potentially offer this new course.

## *4. More AB courses and integrated faculty involvement in courses*

Students would like more integrated faculty participation in astrobiology course offerings, and they would also appreciate additional course offerings. One possibility would be for graduate students to coordinate another course; this would expand offerings and also allow them to develop teamwork skills.

## *5. Refine research rotation requirement with better preparation and micro-rotations*

Students would appreciate more guidance in setting up their research rotations. This could take the form of periodic emails with information about opportunities in labs, a session with students who completed their rotations explaining about how they set them up, or a formal talk by program faculty. Students could also offer lab tours and micro-rotations that could complement the existing rotation requirement, and allow students to learn about more disciplines before they select a research rotation.

## *6. Expand opportunities for interaction*

When asked about their expectations for the Astrobiology program, students agreed that they anticipated more interaction “with faculty, with other students, and with the program.” They offered the following suggestions to facilitate this interaction:

- Having a reception after the speaker series; students currently just show up and leave, without much interaction.

- Forming a journal club
- Sharing office space with students in other departments

Students appreciated existing opportunities like lunches with visiting speakers, but those involved in coursework and teaching expressed frustration that their schedules made it difficult to attend.

#### *7. Foster interactions with international researchers at the University of Washington*

Students with international collaboration experience reported excellent outcomes. These experiences would be strengthened by extending invitations to international colleagues to visit the University of Washington. Hosting conferences or hosting groups of international students and scholars would provide more opportunities for interaction, and would facilitate student research residences by expanding their professional networks.

#### *8. Professional development*

One student suggested that a proposal writing workshop would be helpful. Other students preferred to learn this skill by working directly with faculty. One student who helped an advisor write a proposal believed this was the ideal way to learn about proposal writing.

When asked about co-authorship, students indicated that communication was key to deciding who would be listed as first author or second author. One student cited a new open-source biology journal in which authors' names were listed in alphabetical order, with footnotes. The footnotes described each author's contributions. This was cited as a good way to resolve conflicts regarding co-authorship.

#### *9. School outreach*

One student suggested bringing AB into high schools as a way to get people interested in science, saying, "I haven't ever had a conversation with a K-12 student where I didn't see their eyes light up. There's a huge gap in general public knowledge of science. We need to start to bridge that gap."

The student referred to Project AstroBio, a NASA-funded attempt to get PhD level scientists in classrooms several times per year, as a way to facilitate this outreach.

### **Conclusion.**

Students in the focus group had thoughtful comments and succinct recommendations for enhancing the AB program. They were satisfied with the program on the whole and especially pleased with its interdisciplinary approach.